

Commonwealth of Pennsylvania.

DEPARTMENT OF AGRICULTURE

BULLETIN No. 238

PROCEEDINGS OF THE
THIRTY-SIXTH ANNUAL MEETING

OF THE

Pennsylvania
State Board of Agriculture



HELD IN THE

CHESTNUT STREET AUDITORIUM, HARRISBURG, PA.

JANUARY 21, 22 and 23, 1913

HARRISBURG:

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1913.



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**MEMBERS OF THE
PENNSYLVANIA
STATE BOARD OF AGRICULTURE
FOR THE YEAR 1913**

MEMBERS EX-OFFICIO

HON. JOHN K. TENER, Governor.
HON. HENRY HOUCK, Secretary of Internal Affairs.
DR. N. C. SCHAEFFER, Superintendent of Public Instruction.
DR. EDWIN ERLE SPARKS, President of the State College.
*HON. A. E. SISSON, Auditor General.
HON. N. B. CRITCHFIELD, Secretary of Agriculture.

APPOINTED BY THE GOVERNOR

R. H. Thomas, Jr., Mechanicsburg, Cumberland County, ..Term expires 1915
Gen. James A. Beaver, Bellefonte, Centre County,Term expires 1916

APPOINTED BY THE STATE POULTRY ASSOCIATION

.....

**APPOINTED BY THE PENNSYLVANIA BRANCH OF THE
AMERICAN POULTRY SOCIETY**

W. Theo. Wittman, Allentown,1916

**APPOINTED BY THE PENNSYLVANIA BEE-KEEPERS
ASSOCIATION**

E. A. Weimer, Lebanon,1915

ELECTED BY COUNTY AGRICULTURAL SOCIETIES

Term expires.

Adams, A. I. Weidner, Arendtsville,1915
Allegheny, A. J. Purdy, Imperial, R. F. D. No. 1, ..1915
Armstrong, S. S. Blyholder, Kelly Station,1914
Beaver, A. L. McKibben, New Sheffield,1914

*Term expires May 1, 1913.

Term expires.

Bedford,	Wm. F. Biddle,	Everett,	1915
Berks,	H. G. McGowan, ...	Geiger's Mills,	1916
Blair,	W. Frank Beck,	Altoona,	1914
Bradford,	F. D. Kerrick,	Towanda,	1916
Bucks,	B. Frank Wambold, .	Sellersville,	1914
Butler,	W. H. Milliron, ...	Euclid,	1914
Cambria,	L. J. Bearer,	Hastings,	1916
Cameron,	R. P. Heilman,	Emporium,	1916
Carbon,			
Centre,	John A. Woodward, .	Howard,	1915
Chester,	M. E. Conard,	Westgrove,	1915
Clarion,	J. H. Wilson,	Clarion,	1916
Clearfield,	Harrison Straw,	Clearfield,	1916
Clinton,	J. A. Herr,	Millhall, R. F. D.,	1914
Columbia,	A. P. Young,	Millville,	1916
Crawford,	J. S. Patton,	Hartstown,	1914
Cumberland,	Abram Bosler	Carlisle,	1916
Dauphin,	Edward S. Keiper, ...	Middletown,	1914
Delaware,	E. J. Durnall,	Swarthmore,	1914
Elk,	John M. Wittman, ..	St. Mary's,	1915
Erie,	John J. Rouse,	Wattsburg,	1916
Fayette,	John T. Smith,	Dunbar,	1916
Forest,			
Franklin,	John P. Young,	Marion,	1914
Fulton,	Frank Rauch,	Hancock, Md.,	1916
Greene,	C. E. Lantz,	Carmichaels,	1916
Huntingdon,	Geo. G. Hutchison, ..	Warrior's Mark,	1915
Indiana,	S. C. George,	West Lebanon,	1916
Jefferson,	Peter B. Cowan,	Brookville,	1916
Juniata,	Matthew Rodgers, ...	Mexico,	1915
Lackawanna,	Horace Seamans,	Factoryville,	1916
Lancaster,	J. Aldus Herr,	Lancaster,	1914
Lawrence,	Sylvester Shaffer, ...	New Castle,	1916
Lebanon,	H. C. Snavely,	Cleona,	1916
Lehigh,	P. S. Fenstermaker, .	Allentown,	1915
Luzerne,	J. E. Hildebrant, ...	Dallas, R. F. D.,	1914
Lycoming,	A. J. Kahler,	Hughesville,	1915
McKean,	E. A. Studholme, ...	Smethport,	1916
Mercer,	W. C. Black,	Mercer,	1914
Mifflin,	M. M. Naginey,	Milroy,	1916
Monroe,	F. S. Brong,	Saylorsburg,	1916
Montgomery,	John H. Schultz,	Norristown,	1914
Montour,	J. Miles Derr,	Milton, R. F. D.,	1916
Northampton,	C. S. Messinger,	Tatamy,	1915
Northumberland,	I. A. Eschbach,	Milton, R. F. D.,	1914
Perry,	Clark M. Bower,	Blain,	1916
Philadelphia,	David Rust,	Philadelphia,	1916
Pike,	B. F. Killam,	Paupack,	1915
Potter,			
Schuylkill,	John Shoener,	New Ringold,	1916
Snyder,			
Somerset,	John C. Weller,	Rockwood,	1914

			Term expires.
Sullivan,	E. R. Warburton, ...	Campbellsville,	1915
Susquehanna,	Frank A. Davies,	Montrose,	1916
Tioga,	Calvin H. DeWitt, ...	Mansfield,	1914
Union,	J. Newton Glover, ...	Vicksburg,	1914
Venango,			
Warren,	R. J. Weld,	Sugargrove,	1914
Washington,	D. S. Taylor,	Burgettstown,	1914
Wayne,	Warren E. Perham, .	Pleasant Mount,	1916
Westmoreland,	W. F. Holtzer,	Greensburg,	1916
Wyoming,	G. A. Benson,	Tunkhannock,	1916
York,	G. F. Barnes,	Rossville,	1914

OFFICERS

PRESIDENT

Hon. John K. Tener, Harrisburg

VICE PRESIDENTS

J. Aldus Herr, Lancaster
H. G. McGowan, Geiger's Mills
S. S. Blyholder, Kelly Station

EXECUTIVE COMMITTEE

Matthew Rodgers, Mexico
A. J. Kahler, Hughesville
Dr. W. Frank Beck, Altoona
D. S. Taylor, Burgettstown
M. M. Naginey, Milroy
C. H. DeWitt, Mansfield
A. I. Weidner, Arendtsville
F. D. Kerrick, Towanda
J. Newton Glover, Vicksburg
Hon. N. B. Critchfield, Secretary, Harrisburg
R. J. Weld, Assistant Secretary, Sugargrove

ADVISORY COMMITTEE, CONSULTING SPECIALISTS AND STANDING COMMITTEES AS REPORTED BY THE EXECUTIVE COMMITTEE

ADVISORY COMMITTEE

Dr. W. Frank Beck, Altoona
F. D. Kerrick, Towanda
J. Newton Glover, Vicksburg

COMMITTEE ON RESOLUTIONS

M. M. Naginey, Milroy
P. S. Fenstermaker, Allentown
Joel A. Herr, Millhall
F. S. Brong, Saylorsburg
W. F. Holtzer, Greensburg

CONSULTING SPECIALISTS

Botanist,
Pomologist, Chester J. Tyson, Floradale
Chemist, Dr. Wm. Frear, State College
Veterinary Surgeon, Dr. C. J. Marshall, Harrisburg
Sanitarian, Dr. W. Frank Beck, Altoona
Microscopist and Hygienist, .. Prof. J. W. Kellogg, Harrisburg
Entomologist, Prof. Franklin Menges, York
Ornithologist, Prof. H. A. Surface, Harrisburg
Meteorologist, E. R. Demain, Harrisburg
Mineralogist, Dr. Isaac A. Harvey, Lock Haven
Apiarist, H. C. Klinger, Liverpool
Economic Geologist, Baird Halberstadt, Pottsville
Agricultural Geologist, W. H. Stout, Pinegrove
Forest and Forestry, Robert Conklin, Harrisburg
Feeding Stuffs, G. G. Hutchison, Warrior's Mark

STANDING COMMITTEES

LEGISLATION

I. A. Eschbach,	Milton
A. J. Kahler,	Hughesville
H. C. Snavely,	Cleona
H. G. McGowan,	Geiger's Mills
Matthew Rodgers,	Mexico

CEREALS AND CEREAL CROPS

B Frank Wambold,	Sellersville
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ROADS AND ROAD LAWS

Calvin H. DeWitt,	Mansfield.
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FRUIT AND FRUIT CULTURE

A. I. Weidner,	Arendtsville
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DAIRY AND DAIRY PRODUCTS

W. E. Perham,	Pleasant Mount.
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FERTILIZERS

John H. Schultz,	Norristown
------------------------	------------

WOOL AND TEXTILE FIBERS

Sylvester Shaffer,	New Castle
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LIVESTOCK

Dr. M. E. Conard,	Westgrove
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POULTRY

W. Theo. Wittman,	Allentown
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PROCEEDINGS OF THE THIRTY-SIXTH ANNUAL MEETING OF THE STATE BOARD
OF AGRICULTURE, HELD IN THE CHESTNUT STREET AUDITORIUM, HARRIS-
BURG, PA., JANUARY 21, 22 AND 23, 1913

The Board met at 9 A. M. January 21, 1913, but immediately adjourned until 1 P. M., on account of the Hall being insufficiently heated; at which time it was called to order by Vice-President Horace Seamans.

The CHAIRMAN: Brother Members of the State Board of Agriculture: I regret very much to tell you that I am about half sick. I am not feeling very well, but I will endeavor to do the best I can, and Brother Hutchison and Brother Schultz here have agreed to see me through, if I fail. First, is the roll-call by the Secretary.

The roll of members was then called by the Secretary, and at this and subsequent roll-calls the following members were found to be present:

Governor John K. Tener, Dr. Edwin Erle Sparks, Hon. N. B. Critchfield, Members Ex-officio. R. H. Thomas, W. Theo. Wittman, A. I. Weidner, A. J. Purdy, S. S. Blyholder, W. F. Biddle, H. G. McGowan, W. Frank Beck, F. D. Kerrick, B. Frank Wambold, W. H. Milliron, L. J. Bearer, R. P. Heilman, John A. Woodward, J. H. Wilson, Harrison Straw, Joel A. Herr, R. P. Young, E. S. Keiper, John M. Wittman, John J. Rouse, John T. Smith, John P. Young, G. G. Hutchison, Peter B. Cowan, Matthew Rodgers, Horace Seamans, J. Aldus Herr, Sylvester Shaffer, H. C. Snavelly, P. S. Fenstermaker, J. E. Hildebrant, A. J. Kahler, E. A. Studholme, W. C. Black, M. M. Naginey, F. S. Brong, John H. Schultz, J. Miles Derr, I. A. Eschbach, Clark M. Bower, B. F. Killam, John Shoener, John C. Weller, E. R. Warburton, Calvin H. DeWitt, J. Newton Glover, R. J. Weld, D. S. Taylor, Warren E. Perham, W. F. Holtzer, G. F. Barnes, M. P. Shoemaker and J. L. Patterson.

The following Consulting Specialists were also in attendance: Chester J. Tyson, Pomologist; Dr. Wm. Frear, Chemist; Dr. C. J. Marshall, Veterinary Surgeon; Dr. W. Frank Beck, Sanitarian; Prof. J. W. Kellogg, Microcopist and Hygienist; Prof. Franklin Menges, Entomologist; Prof. H. A. Surface, Ornithologist; Baird Halberstadt, Economic Geologist; W. H. Stout, Agricultural Geologist; Robert Conklin, Forests and Forestry; G. G. Hutchison, Feeding Stuffs.

The following named persons were present and admitted to seats as representatives from Agricultural Associations in Pennsylvania:

Lebanon County Agricultural and Horticultural Association:

Edward Shuey, Lickdale; Clark G. Long, Jonestown; E. S. Risser, Lawn; J. F. Brubaker, Lebanon; J. G. Beckley, Lebanon; Hon. E. A. Weimer, Lebanon; S. P. Heilman, M. D., Lebanon; P. R. Boltz, Lebanon; F. R. Fertig, Lebanon; J. H. Bennitch, Newmanstown.

Juniata Agricultural Society:

Jerome S. Sieber, D. C. Pomeroy, Alph. Lyter, Hon. R. E. Gronoinger, John G. Hertzler, Stuart A. Robinson, Jas. N. Groninger, R. C. Patton.

The following persons were, on motion, received as advisory members and accorded privileges of the floor:

A. A. Grove, Mifflinburg; U. A. Eisenhauer, Lewisburg; J. P. Sharpless, Avondale; Alvin K. Rothenberger, Pennsburg; R. S. Clark, Dillsburg; Wm. Armstrong, Alderson; Harvey S. Adams, Butler; J. M. Campbell, Belleville; Mrs. J. M. Campbell, Belleville; J. C. Naginey, Milroy; W. T. McCoy, Lewistown; C. M. Smith, Lewistown; Thomas McKee, Lewistown; Walter Keams, Lewistown; Philip Merts, Lewistown; H. H. Lamb, Jr., Lewistown; W. J. McNitt, Milroy; Otis Treible, Vosburg; Clarence Treible, Vosburg; E. H. Sloan, Orangeville; T. E. Hyde, Bloomsburg; T. M. Zerr, Geiger's Mills; C. A. Hershey, Kelly; Moses Bond, A. H. Adams, Stewart Grove, Daniel Hopkins, Chas. Zeller, Rose Bud; J. G. Shamfelt, E. H. Kunkel and J. L. Shrader.

The SECRETARY: There is a quorum present, Mr. Chairman.

The CHAIRMAN: Next is the reading of the minutes.

The SECRETARY: Mr. Chairman, before we read the minutes and before we proceed to any business at all, I wish to make a motion. I have learned during the forenoon that Dr. Schaeffer's daughter, who has been recently quite ill, is dead, and he will therefore not be with us at this meeting. He was on the program for today, and I move that a telegram be sent to Dr. Schaeffer at once expressing our sympathy in this sad affliction.

MR. HUTCHISON: I second the motion. I missed Dr. Schaeffer today at the table, and on making inquiry found that he was detained on his sad mission.

The motion was carried.

The CHAIRMAN: The Secretary will now read the minutes of the last meeting.

The Secretary then read the minutes of the Spring meeting of the State Board of Agriculture, held at Towanda, Pa., May 21-24, 1912.

The CHAIRMAN: Gentlemen, you have heard the reading of the minutes of the last meeting; what will you do with them?

Mr. HUTCHISON: Mr. Chairman, I move that the minutes be accepted and approved.

The motion was seconded and carried.

The CHAIRMAN: Next, is the appointment of a Committee on Credentials. How many is it the usual rule to have?

The SECRETARY: My recollection is, five.

The CHAIRMAN: I will appoint the Committee on Credentials as follows: Joel A. Herr, of Clinton county; W. H. Milliron, of Butler county; B. F. Killam, of Pike county; Warren E. Perham, of Wayne county and W. C. Black, of Mercer county. I suppose that Committee will now retire.

A Member: Those whose credentials have been sent in and who haven't got them with them, is it necessary for them to say anything to the Committee?

The SECRETARY: If their credentials have been sent in, it is not necessary to say anything to the Committee.

The Credential Committee then retired.

The CHAIRMAN: Next, is the reports of Standing Committees; and first, is the report of the Committee on Cereals and Cereal Crops, J. Newton Glover, Chairman, Vicksburg, Pa.

This report was then read by Mr. Glover as follows:

REPORT OF THE COMMITTEE ON CEREALS AND CEREAL CROPS

By J. NEWTON GLOVER, *Chairman*

The year 1912 will go down in history for its bumper crops which exceeded any previous yields of corn, oats, barley, rye, potatoes and hay, while buckwheat, flaxseed and wheat were exceeded in bushels only two or three times before this.

CORN

When we learn that this crop is 3,124,746,000 bushels and the only one above three billions, we see why the present market price is 48 cents per bushels against 62 this time a year ago. Last spring we heard of a poor seed corn which would not germinate well, of the ravages of the cut-worm and weather too dry to sprout and grow well after the wet spring which delayed plowing and planting, yet the promise was fulfilled: "I will give you the rain of your

land in his due season, that thou mayest gather in thy corn;" as the abundant rains during July, August and September made this wonderful corn crop possible. Year by year we are learning to prize this crop more for its feeding value for all livestock, and are trying to grow more of it per acre by selection of our own seed which is suitable to our soils, by applying the yard manure to make a sod the previous year or for the corn crop itself by thorough preparation of a seed bed and by cultivation to conserve moisture as long as possible.

This season demonstrated again the advantages of fall plowing of heavy clay and low, black soils to get them into good shape for planting and to avoid damage from cut-worms, even if there is some loss in fertility of soil without a growing crop.

Fears were entertained that this crop would not mature on account of the continued rains, but the late fall enabled corn to mature properly and gave ample time for gathering the crop, though the work was not completed till December first, or later, and then the stover had much sap in it, but is making an abundance of feed when shredded as it should be for ease in handling.

The yield per acre of corn in this State is 42.1 bushels; but many entire crops made 75 bushels or better, yet this yield was only a little over half the yield of 139 bushels grown by Dewey Hanes, the 14 year old Ohio champion and 136 bushels by Ralph Beck of Logansville, this State, which showed what large crops of corn can be grown under favorable conditions.

WHEAT

The damage done to this crop in 1910 caused many farmers to delay their wheat seeding when September of that year in its latter half was unusually wet, so that many low fields could not be seeded, or were put out too wet while some more rye than usual was seeded on account of the lateness of the season and to escape the Hessian fly. As a result early sown wheat made a good growth for the winter during which it was protected by snow most of the time. Spring was favorable for growth and filling, and the crop was a good one generally in the State, except the very late seeding, many acres of which were seeded to oats in our neighboring State of Ohio.

Average yields of 25, 30 and 35 bushels of wheat were reported to us instead of from 12 to 20 as is the case often.

Just when to seed wheat, is a question with many farmers, but experience has taught that from the 5th to the 20th of September is the best time if the soil has been well prepared, as earlier seeding may be attacked by the Hessian fly and later seeding may not grow enough stalk to withstand the winter. The price for wheat has ranged about the same as last year in the State, ninety-five cents to one dollar.

OATS

What was said of wheat, will help to explain, in part, the big oats crop so far as acreage is concerned, on account of many acres of poor wheat being seeded to oats.

This crop is better adapted to the northern sections of the State and the United States, though in favorable seasons good yields may be grown in the central and southern sections of the State, but it is not generally a profitable crop, but being a good feed for horses and other stock and fitting in a rotation after corn, before wheat, it is grown more than it would be, if more acres of corn could be moved in time to seed to wheat. Oats is selling at 40 cents per bushel, which is eight cents less than a year ago.

RYE

Rye is grown largely for the straw, or on thin soils where wheat does not do so well or after buckwheat, which means a late seeding. The grain is used largely for distilling, or for horse and hog feed, as rye bread is not used as largely for food or bread as formerly.

The yield of rye per acre is less usually than wheat, as is also the price, but the straw commands a good price for bedding horses in cities, especially last year when straw sold at prices often received for hay.

BARLEY

Barley is not largely grown in this State, though it is a valuable feed for hogs and horses, but being shorter in the straw, and yielding less per acre than oats it is grown most largely where corn cannot be grown.

Pennsylvania stands second in the production of buckwheat, and the crop for 1912 in the United States was 19,249,000 bushels, which was the largest crop since 1868. This crop is grown to some extent in different parts of the State, but a few counties grow most of it. We all enjoy buckwheat cakes and maple syrup which go well with sausage to make a breakfast fit for a King.

Hard and continued rains last season interfered with gathering this crop so that it could not all be gathered without considerable loss. The price does not vary much from year to year, running from sixty to eighty cents per bushel.

POTATOES

Potatoes yielded 420,647,000 bushels, making it the greatest crop on record for the country. Early potatoes did not yield well, due to the dry weather earlier in the season, but late ones did very well with plenty of rain which started rot and made the crop hard to lift and some trouble after they were stored. More attention is given to spraying to kill beetles and prevent blight than formerly, but to keep seed potatoes over winter without sprouting too much for planting is a hindrance to large yields, unless one buys northern seed every year. Whether our soils and climate are not adapted to this crop, is a question since our yields of 100 bushels per acre is greatly exceeded by the German who grows 250 bushels per acre for a crop. A year ago potatoes sold for \$1.00, now they are about half that price.

CLOVER

The dry weather during the summer of 1911 caused most of the clover to die in stubble fields with the result that most of the hay

made in 1912 was timothy, yet the hay crop in the whole country was the largest of record—72,691,000 tons, and the price for which hay sold last year was the highest since the war or \$31.50 per ton.

Clover seed sown early in March of 1911 made such a growth as to withstand the drought and made a good growth and fine hay, as the weather was very favorable for haying. The aftermath or second growth was good, making splendid pasture and much second-crop hay was made while clover seed was well filled when there was a stand from which to make seed. This good stand of timothy induced many farmers to make timothy seed which yielded well and the price fell accordingly from what it was the previous year and hay is about \$6.00 a ton cheaper than a year ago. The present stand of clover and timothy is good, giving promise of a good hay crop this year.

ALFALFA

The long, cold winter of 1912 did much damage to alfalfa fields, so the stand was thin in spring and many fields were turned and re-seeded to alfalfa to get a good stand and more acres of it were sown than any year before, and this will be the case as its feeding value and yield per acre is fully appreciated.

You will notice with the big crop yields that prices for all grains and crops are naturally lower than last year, and one sometimes wonders whether a big crop which involves more labor is as much real advantage to the producer as a smaller crop yield and better prices for the crop.

Someone has said: "He who causes two stalks to grow where one formerly grew is a public benefactor;" yet Mr. Collingwood says that to double the present crop production would mean a panic for the farmer.

When we learn that the farm products of six billion dollars of 1912 cost the consumer thirteen billion dollars, it looks as though the producer did not get his share for his products, or else the middleman's profits were too great, that consumers paid too much for what they bought, causing the cry of the "high cost of living," or the cost of high living. This leads us to conclude that we should try to produce more per acre at less cost, than learn how, when and where to market these products to a better advantage to both producer and consumer.

The CHAIRMAN: Gentlemen, you have heard the reading of this most excellent report by Mr. Glover; what is your pleasure?

It was moved and carried that the report be accepted and placed on file.

The CHAIRMAN: The next report is on Roads and Road Laws, by Mr. J. L. Patterson, Chairman, McConnellsburg, Pa.

This report was then read by Mr. Patterson as follows:

REPORT OF THE COMMITTEE ON ROADS AND ROAD LAWS

By J. L. PATTERSON, *Chairman*

Before beginning this report, I wish to say, that anyone living, as the writer does, in the only county in the State of Pennsylvania, without a railroad or trolley, and who, in order to reach Harrisburg in time for the first session of the Board meeting, had to get out of his warm bed at 3:30 A. M., eat a hasty breakfast, jump into an old dilapidated stage-coach and ride ten miles over a rough road to the nearest railroad station, that fellow appreciates, perhaps more keenly the need of good roads than some who are more favorably located.

As one attempts to review the history and gather statistics relating to the Public Roads of the State and Nation, it is then that he realizes as he never did before, the magnitude of the problem with which we have to deal. The Legislature not having been in session since our last Board meeting one year ago, there is no new legislation to report. Your Chairman will, therefore, occupy a few minutes in discussing the first division of the subject, namely, "Roads," leaving the second, "Road Laws" to those more conversant with and therefore the better able to handle them.

From statistics gathered by the National Highways Association, it is estimated that there are now in the United States over 2,300,000 miles of public roads and less than $12\frac{1}{2}$ per cent. are improved. and these only partly so. Neither from an economical nor from a social stand-point can we, as a Nation, afford to have these conditions exist. Why do we hear so much about the high cost of living? I think the 2,000,000 miles of poor roads running all over this broad land are responsible for part of the trouble. It is said to cost our farmers $12\frac{1}{2}$ cents a ton to haul produce a mile on a good road, double that amount on an average country road, and four to six times that over a bad road. It costs our farmers more to haul a load of wheat ten miles to the railroad than to ship it from New York to Liverpool. Major Nesbit, formerly U. S. Pension Agent at Pittsburg and now owning and operating the largest peach orchard in Western Pennsylvania, says: "Good roads would just double my facilities for marketing the product of my orchards, and it would double the opportunity of local peach lovers to secure good fruit at fair prices." Good roads would certainly make the consumers' dollar go farther; and at the same time would put a larger portion of that dollar in the farmers' pocket.

At the National Good Roads Convention held in Washington, D. C. a few months ago, Mr. Taylor, the Secretary, suggested that the Government impose an additional internal revenue tax of ten cents on liquors, cigars and tobacco. He declared that the money raised in this way would, in 25 years, improve the roads of the entire country. Congressman Underwood, who was a delegate to the convention, said: "No country has ever yet succeeded in building a great system of good roads until it turned to National aid." It does seem, that in order to facilitate the mail service, if for no other reason, it would be the part of economy for the Government to help

build and maintain the public roads of the country. Good roads have a moral and educational value to a community that cannot be measured by dollars and cents. Good roads go hand in hand with good schools. In Massachusetts, Rhode Island, Connecticut and Ohio there is an average improved road mileage of about 35 per cent. and more than 77 per cent. of the children attend school, while in Alabama, Mississippi, South Dakota and Georgia the figures are one and a half per cent. less than 60 per cent. respectively. Is it the part of wisdom for us to build good school houses and employ high priced teachers and then, because of the impassable condition of our country roads, be compelled to keep our children out of school for one or perhaps two months of the school term? It is worse than foolish; it is almost criminal.

Real estate values are enhanced by good roads; a single example will illustrate this fact. Clarke county, Georgia, two years ago, voted a \$100,000.00 bond issue for road improvement. The average land valuation was then \$6.00 per acre. To-day the valuation has jumped to \$15.00. Whether we farmers like the automobile or not, it is a fact that it is here and here to stay. The Farmers Bulletin, No. 505 says, "It is the most potent single influence that has reached the road problem since McAdam. The adaptability of the automobile and motor truck is almost unlimited and the farmers, especially those in the West and Middle West, have been quick to recognize it." For the speedy delivery of milk and garden truck it has the old mule and spring wagon "beaten to a frazzle."

While the automobile is said to be a menace to our improved highways, I believe that the Association composed of automobile owners have done more in the past ten years to quicken the sentiment in the country for good roads than has been accomplished by the farmers in five times that many years. The little Republic of Switzerland has, it is estimated, 3,000,000 tourists every year, and she depends largely on the money expended by these tourists for her revenue. It has been found profitable to build and maintain improved roads of the highest type to hold this business in that little country. Those who have travelled abroad tell us that we have in American scenery that for grandeur and variety will compare most favorably with that of Europe. In McConnellsburg, the county seat of Fulton and located on the old Chambersburg and Bedford turn-pike, a road noted the country over for its picturesque scenery, the leading hotel of the place records 1077 automobiles that stopped there during the season of 1912. I will say just here that this road is one of the few in the State that still adheres to the antiquated system of tolls. This, by the way, is no light tax on our farmers, as we have to pay three cents per mile for the privilege of driving a two-horse team over this road to our nearest railroad station, Mercersburg, a distance of ten miles, where most of our produce is marketed. We would respectfully recommend to the present Legislature that it either require the owners of toll roads throughout the State to live up to their charter requirements, or else abandon the toll system altogether.

From reports received by the Highway Department from road supervisors throughout the State, the public road mileage of Pennsylvania is estimated at 86,000 miles. At the present rate of road

improvement, the most of us will be privileged to wade through mud the balance of our days.

The Act of Assembly, approved May 31, 1911, which contemplates the improving of 8,000 miles of State Highway and for which a bond issue of \$50,000,000 will be required, is a move in the right direction and is along the line of what has been done in some of our neighboring states. This great system of highways leading to and connecting the different county-seats, if properly managed, cannot fail to be of great advantage to the people of the state.

The Department, however, from information I have received from different parts of the State, is being criticised pretty severely for the way much of the preliminary work is being done on roads taken over. One member of the Board writes me: "Never have we seen such a complete failure to deliver the goods promised as we have witnessed on the roads worked by the State in my county; lack of intelligence is stamped on every mile of it." In Fulton county the State has taken over about one hundred miles of the roads and repair work was begun this fall. I will have to concur with the brother just quoted, in saying that in my county much of the road repaired was in a far worse condition after than it was before the work was done. Too much politics, and not enough intelligence seems to have been the trouble. Before this preliminary work was done, the majority of our people would have favored the bond issue; since then the sentiment seems to have changed materially. The State aid highways, of which many counties in the State have at least a few miles, do not give universal satisfaction. In Fulton county we have 16,000 feet of this road, and a letter from a friend, who was largely instrumental in having this road built, reports that after three years of hard and constant usage it shows but little signs of wear. From other parts of the State, however, we learn that these roads are not giving the satisfaction expected of them. It would seem from what I can learn that where these roads have failed to make good, the trouble can be traced to poor construction, faulty material and lack of proper drainage. Our report so far has largely dealt with the State roads, but we must not overlook the 75,000 miles of dirt roads that really concern us more than do the improved ones, because we have so many more miles to contend with. The amount of work needed to be done and the small amount of money with which to do it makes the problem indeed a serious one.

From statistics taken from Farmers' Bulletin, No. 321, it would seem that the Split-Log Drag is the cheapest piece of road machinery yet invented. The following figures will show the economy of its use. In Maine, where the drag was used, the cost per mile was three dollars. In Iowa, the cost was two dollars and forty cents. In Missouri, the cost was three dollars and in Minnesota, not over five dollars. These figures contemplate the expense of a years' work on these several roads. While the drag is not so generally used in Pennsylvania, I think it is growing in favor and should be used where the conditions would warrant it.

This report, already too lengthy, will be brought to a close with the hope that a word may have been dropped along the way that may, at least, call attention to the great needs of this much neglected subject of road improvement.

The CHAIRMAN: I believe the road question is the most important subject that comes before our Board. What do you wish to do with this report?

A Member: I move that it be accepted and published with the proceedings.

Motion seconded.

A Member: In approving of that resolution, does it mean that we approve of this bond issue of fifty million dollars?

The CHAIRMAN: I didn't get that idea, but I didn't hear it all clearly.

A Member: This paper is all right; but I, for one, would not vote to favor that fifty million dollar bond issue—would not go on record in favor of that.

A Member: The paper doesn't recommend it.

The motion was then adopted.

The CHAIRMAN: The next report is on Fruit and Fruit Culture, W. F. Biddle, Chairman, Everett, Pa.

This report was then read by Mr. Biddle as follows:

REPORT OF THE COMMITTEE ON FRUIT AND FRUIT CULTURE

By W. F. BIDDLE, *Chairman*

Mr. Chairman and Members of the State Board of Agriculture: I beg to submit to you the following report as I have found conditions.

The fruit crop of Pennsylvania for the year 1912 was not a large crop, in many sections farmers buying their cooking and eating apples. There were only a few sections where there were any peaches at all; and considering the small crop, prices were not extremely high. Pears had been planted very extensively in this State but are not as profitable as was expected. The pear blight is the worst enemy the pear grower has to contend with, in many instances the whole crop has been destroyed. There is a bright future for the pear grower if he is on to his job, and will control the blight and curculio, the two worst enemies of the pear. Great progress has been made in holding the different scales in check. I believe that there should be some means to make the fruit grower spray who will not spray so that his neighbor who does spray and sprays thoroughly will feel happy that he has conquered his enemies—the scales.

Cherries and plums have been very profitable to the grower the past year, in many instances receiving fancy prices for their fruit, when put up in an attractive way. The one word that every fruit

grower should put above all others is *quality*. Where quality is not taken in consideration you cannot expect to make fruit growing profitable.

There has a new era dawned upon the Pennsylvania fruit grower, —the parcels post—it is not perfect, it does not meet our conditions or demands; but by our co-operation and by perseverance we can win out.

My attention has been called on several occasions to the probabilities of an over-production of fruit. There is already an over-production of inferior and infected fruit at the present time. I doubt if there *ever* will be an over-production of good first-class fruit, fruit of quality. To have this fruit of quality, we must plant the different fruits in soils that are adapted to the individual fruit. Cultivate, prune, fertilize and spray, so that we can bring the quality up to the highest standard. And then put up an honest pack, get it to the consumer in as short and as cheap a way as possible. I am sorry to report it, but it is nevertheless so that too any fruit growers do not pay enough attention to the honest packing.

The marketing of fruit through an Association will be a good thing for the smaller fruit grower; but they in several instances have not been a success, because after a reputation had been won, someone had put in some inferior fruit or will make a dishonest pack and then it will be some time before that can be overcome.

I will now try and prove that the supply is not equal to the needs of the consuming masses. According to the report furnished me by my friend Prof. Lake, Secretary of the United States Pomological Society, I will quote just a few of the greatest apple-growing states in the Union. Pennsylvania with her 6,300,000 bushels of apples to 7,665,111 of a population, gives less than one bushel to each individual. Maine produced about 4 bushels to each individual. Missouri less than two bushels. Oregon about two and one-half bushels. California a little over two bushels. You can readily see that there is not an over-production. Why not increase the consumption of apples and other fruits by growing them so perfect and delicious that they will take the place of the orange on the city table?

There are a great many orchards being neglected over the State and seventy-five per cent. of them are very badly infested with scale, that will kill them in the course of a year or two. The man that tends his orchard with a view to growing perfect fruit is the man that will win. Let us advertise Pennsylvania as the greatest fruit growing state in the Union and then prove it by producing the goods.

The CHAIRMAN: Gentlemen you have heard this report; what will you do with it?

It was moved and carried that the report be received and placed on file.

The CHAIRMAN: Next is the discussion; or is the Credential Committee ready to report? I hear no answer. Next is discussion on these reports. If anyone has anything to say they now have an opportunity.

MR. HUTCHISON: Hadn't we better take up the regular program and get along with these other reports, or we will be crowded and late?

The CHAIRMAN: All right then, we will proceed to the reports of Specialists. First, is the Report of Pomologist.

The SECRETARY: If there is no objection, I would like to have the report of the Veterinarian taken up at this time, for the reason that Mr. Tyson is not in, he has another meeting in progress that he has to be in attendance upon now, and I believe that the Veterinarian is here. I saw him a few minutes ago.

The CHAIRMAN: Well then, we will postpone this report and take up the Report of the Veterinarian, Dr. C. J. Marshall, of Harrisburg, Pa.

This report was then read by Dr. Marshall as follows:

VETERINARY SERVICE

By DR. C. J. MARSHALL, *State Veterinarian*

Pennsylvania might be congratulated for the comparatively small losses resulting from the transmissible disease of animals and also for the means it has provided for controlling them. Probably no State in the Union loses a less percentage of its livestock from disease, and none are better equipped to prevent such losses. For a number of years those interested in agriculture have taken an intelligent interest in providing measures for preventing and controlling the diseases of animals.

Through such efforts one of the best Veterinary Schools in this country has been established at the University of Pennsylvania. It is properly housed and thoroughly equipped for teaching the Veterinary sciences, comprising such branches as general practice, surgery, pathology, bacteriology, meat and milk hygiene, animal husbandry, etc. There are about one hundred and fifty students enrolled at the present time, many of whom are farmers' sons from the various parts of the State. A large proportion of them are high school graduates and are considered among the best prepared, most studious and capable men in the University whose student membership numbers over 5,000. Of the 840 Veterinarians in Pennsylvania, over 500 are graduates of different Veterinary Colleges, and 222 of this number are Alumni of our Veterinary School.

It costs the State about \$30,000 per year to maintain this school. The buildings and equipment were provided from the generous appropriations made by the Legislature, and while the building is not entirely completed it is considered adequate for the present needs. For a number of years the school was maintained only through the generosity of those interested in the diseases and care of animals. It is hoped that the State will from now on supply the necessary funds for maintaining its only Veterinary School.

The School was established several years before the State Livestock Sanitary Board was organized. The work of each has been intimately united. The good work done at the School has made it possible for the Board to accomplish many gratifying results that would have been impossible without this assistance.

The duties and responsibilities of the Board have increased rapidly every year. The last legislature appropriated \$49,000 for the use of the Board and it will not be sufficient to complete all the work that it will be called upon to do. Some may feel that too much money has been spent recently for Veterinary education and Veterinary sanitary control work. When we stop to consider the amount of money invested in livestock in Pennsylvania and the unbearable losses that might easily result from an outbreak of some well known animal plague, it will be seen that a very small percentage of this sum is provided for its protection. Our livestock is valued approximately at \$300,000,000. Less than one cent for every five dollars invested in livestock was spent by the State for Veterinary education and the use of the Board combined for two years, and Pennsylvania is second to none in generosity shown in this line. In Iowa the hogs are valued at \$100,000,000. It was estimated on good authority that her farmers lost from hog cholera alone last year \$12,000,000. That State appropriated the meager sum of \$5,000 to be used in controlling hog cholera for two years.

In the State of Kansas over 30,000 horses died in a period of about two months during the past summer from forage poisoning. This disease, as well as hog cholera, is controllable to a certain extent. Why should these States not provide plenty of money to protect its citizens from such extensive losses? Our people exercise all the good judgment that intelligent citizens could be expected to possess in reference to handling disease. Our veterinarians are as honest and well qualified as any in America, yet without State assistance it would be practically impossible to control some of our most common diseases.

The State Livestock Sanitary Board is well equipped at present to handle any emergency that is likely to arise. The State has provided it with a first class laboratory and a farm of about two hundred acres where an opportunity is afforded to study such diseases as hog cholera, contagious abortion, white scours, naval ill, tuberculosis, glanders, hemorrhagic septicemia in cattle, bacterial dysentery, sporotrichosis and several other diseases that are common to our livestock. Without the farm it would not be possible to study such diseases safely. The farm is located in Marple township, Delaware county, and was purchased originally for the purpose of conducting an experiment, especially in reference to vaccinating cattle against tuberculosis. This experiment covered a period of about five years. Some of the best work done in this line in the entire world was conducted at this farm. It was completed something over a year ago. It was proven that it is possible to produce a certain amount of immunity against tuberculosis. These conclusions were reached several years ago. Time has verified these opinions and no authorities have been able to do more than was accomplished by our Board.

While this experiment was successful to a certain extent and valuable information was obtained that is inestimable in combating

tuberculosis, the plan of immunizing cattle against disease is not considered practical at the present time and there is but little hope that it will become so in the near future. Some of the principal objections that have been demonstrated are as follows: The material used to produce immunity in cattle contains living tubercle bacilli which are virulent for men. Such bacilli have been found to be virulent three years after they were injected into a calf. For this reason a young cow which has been vaccinated may be more dangerous as a producer of milk for human consumption than an animal would be that had a bad case of bovine tuberculosis. Immunity was not produced in every case. Some vaccinated cattle have developed extensive lesions of tuberculosis. Vaccinated cattle usually react for two or three years to a tuberculin test whether they have tuberculosis or not. There is no present diagnostic measure available for detecting tuberculosis in vaccinated animals till it is more or less generalized. For this reason such animals may be looked upon with suspicion.

A number of pure bred reacting cows were placed in the herd during and since the vaccination experiment. Their calves had been raised. The oldest crop are now three years old. They do not react to a tuberculin test and none have shown physical symptoms of the disease. A number have been destroyed during the time and none have shown lesions of tuberculosis. These calves were not vaccinated but were fed on pasteurized milk from the herd, some members of which had tuberculosis of the udder. The calves were allowed to suckle the mother the first two, or three feedings. After this time the calf was removed to a clean warm pen and fed the herd milk which had been previously heated to about 180 degrees Fahrenheit by turning live steam into the can of milk. It has been demonstrated by this experiment that calves and pigs can be fed safely on milk from tuberculous cows if the milk is pasteurized and they are kept in clean quarters away from the diseased herd.

With the exception of the above described experiment, but little is being done at present in reference to controlling tuberculosis in animals at the State farm. Considerable attention has been given during the past year to studying hog cholera, contagious abortion, contagious dysentery, sporotrichosis and hemorrhagic septicemia. The results of such studies will be ready for publication soon.

The Annual Report from the Department of Agriculture for 1907 shows that there was but little hog cholera in Pennsylvania at that time. An occasional outbreak had been reported for a number of years. When compared with some other states, Pennsylvania is not interested extensively in hog raising. The last census report shows that our hogs are valued at \$6,392,000. About 1,500 outbreaks of hog cholera were reported last year from various parts of the State. The Board made an investigation of nearly every one. In most cases the disease has been controlled by following the plans recommended by the Board. The use of hog cholera serum has proven a most valuable remedy in combatting the disease. When hog cholera is reported early and the prescribed measures for handling it are begun soon, the losses have been reduced to about five per cent, while in former times before serum was available the losses would reach 80 to 90 per cent. Without the farm it would not be possible for us to

manufacture hog cholera serum safely. The Board keeps about 200 hogs at the farm for this purpose and is equipped in every way to manufacture this serum which is considered as good as any produced in this country. It is known that the disease has been spread extensively in hog raising states by the promiscuous use of hog cholera of an inferior quality. The serum can be purchased but it is expensive and from the present plan of producing it there is but little hope of being able to buy it cheaply. The Board furnishes it free of charge to the farmer and in some cases it is applied at State expense.

The State Livestock Sanitary Board was organized in 1895. The Governor is President of the Board, the Secretary of Agriculture is Treasurer, the Dairy and Food Commissioner is a member and the State Veterinarian is Secretary. The State Veterinarian as such has very little to do, but as Secretary of the State Livestock Sanitary Board there is much to do. None of the members of the Board are paid for services rendered to it. The Board was organized for the express purpose of controlling contagious and infectious diseases in the State. There can be no doubt but this was the best plan that could have been adopted at the time the Board was organized. Under no other conditions could its usefulness have become so highly perfected or its influence so far reaching. Since its duties have become so varied and extensive it has been realized that it is an onerous duty upon some of the members of the Board to be required to meet and transact routine business that could be done by an executive officer if the authority given the board could be transferred to one person, such authority can only be given by the legislature. There are three possible ways that these responsibilities might be transferred, viz: a Department might be created or the work could be done by a Bureau either in the Department of Health or the Department of Agriculture. There is a precedent and good reasons for each of the three plans. Inasmuch as the work is entirely confined to the lower animals, some believe that it should properly be placed with Agriculture. It is planned at present to ask the Legislature to create a Bureau of Veterinary Service in the Department of Agriculture making the State Veterinarian the Executive Officer and transfer the duties of the State Livestock Sanitary Board to this Bureau.

Aside from the police duties in reference to controlling diseases of animals, the legislature will be asked to transfer the additional duties of the Board to the new Bureau. By the additional duties is meant the enforcement of the law pertaining to Meat Hygiene and Stallion Registration. These two laws are considered satisfactory to the Board and may be transferred to the Bureau with practically no change.

The laws pertaining to the diseases of domestic animals and poultry need strengthening in some ways. This is especially true in reference to handling animals from other states. The Board has had more or less trouble in dealing with interstate cattle.

The present law is hard to enforce and in some cases dealers and shippers feel that unnecessary hardships are imposed. About 30,000 head of cattle were brought into the State during the past year and were submitted to a tuberculin test. It is known that many more animals were imported illegally, but it was not possible to get suffi-

cient evidence in the majority of cases to warrant a prosecution. A number of successful prosecutions were conducted. Cattle for dairy or breeding purposes are required by law to pass a tuberculin test when brought from another state. The test may be applied in the other state by an agent of the Bureau of Animal Industry free of charge to the shipper, such agents can be found in but few places. The shipper can employ a veterinarian in another state to make the test and it can be accepted by your Board, providing the cattle commissioner in such state will certify to his competency and reliability. The purchaser may take a competent veterinarian from this State to another state to make the test and our Board can accept it. The shipper may get a permit from our Board to bring such animals into this State and have them tested at their destination. In most cases the railroads will not handle interstate dairy cattle unless they are accompanied by a record of a tuberculin test or a permit from our Board and the railroad can be prosecuted for bringing such cattle into our State unless accompanied by a test or permit. Where cattle are driven or shipped into the State without a permit or test the Board can quarantine them and hold them till a test satisfactory to the Board is made. Animals that react to a tuberculin test cannot be shipped into another state on account of Federal restrictions.

The law should be fixed so it would be necessary to have all dairy or breeding cattle properly tested in the State from which they are shipped. Any such animals brought under other conditions should be held in quarantine and tested by a regular agent of our Board at the expense of the owner. The expense of such test should be not less than ten dollars for ten animals or less than fifty cents for each one over ten. The money received for such test should be turned over to the State Treasurer and the animals not released from quarantine till the fee for test and keep has been fully paid by the owner.

Those interested in agriculture, and especially those who are engaged in the dairy business, should consider carefully the subject of milk inspection. It will be an unanswerable demand of the public in the near future. This work will be done by some one; it may be the dealers, the local Boards of Health or under the supervision of the State Government.

The laws should be so arranged that it will not be legal to duplicate work of this kind. Producers will be unnecessarily harassed by such inspections if there is no limit to the number of authorities that may call upon him to make whatever changes the fancies of the inspector may demand.

It is believed that all milk hygiene work should be under State supervision. Such authority might be placed in the Department of Health, the Dairy and Food Commissioner or with the Department having charge of animal diseases and sanitation. But work should not be duplicated by these branches of the State service. We should assist in shaping the destinies of this important work. A properly conducted system of milk hygiene should furnish protection to the better class of producers and assist in eliminating the undesirable element that has and is bringing so much criticism and discredit upon one of the most attractive features of agriculture.

MR. HUTCHISON: I move that the paper be received and published as a part of the annual report.

The motion was seconded and carried.

MR. W. E. PERHAM: Mr. Chairman, with your permission, can I read a resolution?

The CHAIRMAN: Yes sir.

Mr. Perham then read the following resolution:

A RESOLUTION

WHEREAS, owing to the change of Administration of the National Government, a new Secretary of Agriculture is to be appointed in the place of Secretary James Wilson who has so long and so efficiently administered the affairs of that office, and

WHEREAS, this Association is greatly interested in having as his successor a man of broad views, sound learning, wide experience and in full sympathy with farming people, therefore be it

RESOLVED, that we hereby express ourselves as in favor of the appointment of Dr. H. J. Waters, formerly of the Pennsylvania State College, and now President of the Kansas Agricultural College, to this position, and direct the Secretary of this body to forward a copy of this resolution to the Hon. Woodrow Wilson, President elect.

MR. HUTCHISON: I take great pleasure in seconding that resolution. Mr. Waters was with us at State College, he is a man of ability and has built up a great college in Kansas and done great things for the Agriculture of that State. It would be a high compliment to this Board, after the years of service he gave us in our institute work, to send such a recommendation for such a worthy man as he is.

A Member: I would like to ask, is he a farmer?

MR. HUTCHISON: He was a professor in our Agricultural College; I cannot state whether he was raised on a farm or not, but he graduated from a State Agricultural school.

A Member: He was raised on a farm.

MR. HUTCHISON: He started in the dairy business and worked his way through school.

MR. J. A. HERR: I would like to add my approval of that resolution. If the brother had not offered it, I should have offered a similar resolution. I have had a long acquaintance with Prof. Waters. I was a trustee of the college while he was there as head of the Agricultural Department of State College, and I tell you he is a charmingly good fellow, besides being a very competent, young, strong, vigorous man, who has developed with remarkable rapidity. The

danger is that we will get some other man who won't be anything like as near to us as he is. It has been rumored, you know, that there's a Texas Congressman who was recommended for the position and an effort will be made to have him appointed. Now, we know this man, and I believe that every member of the Board of Agriculture ought to be willing to stand up for him.

MR. WELD: I want to add to what Brother Herr said. I was a student under Prof. Waters at one time. He is a farmer's boy, who went to the University of Missouri, graduated there and was connected with that institution prior to coming to Pennsylvania. He went back to Missouri and stayed there until he went to Kansas as President of the college in Kansas, and as Brother Herr said, he is a strong, young, big western man, the kind of a man, I believe, that we need at the head of the National Department of Agriculture.

The resolution was then adopted.

The CHAIRMAN: Is the Committee on Credentials ready to report?

MR. JOEL A. HERR: We are ready to report. The blanks are not entirely filled, but we can report now and fill them out a little later.

The CHAIRMAN: We will now listen to the report of the Committee on Credentials:

REPORT OF THE COMMITTEE ON CREDENTIALS

The following credentials of members were presented and found correct, and they were elected to membership:

County	Name	Post Office
Monroe,	F. S. Brong,	Saylorsburg, R. F. D.
Clarion,	J. H. Wilson,	Clarion
Westmoreland,	W. F. Holtzer,	Greensburg
McKean,	E. A. Studholme,	Smethport
Greene,	C. E. Lantz,	Carmichaels
Fayette,	John T. Smith,	Dunbar
Lebanon,	Henry C. Snavelly, ...	Cleona
Clearfield,	Harrison Straw,	Clearfield
Mifflin,	M. M. Naginey,	Milroy
Perry,	Clark M. Bower,	Blair
Cameron,	R. P. Heilman,	Emporium
Jefferson,	Peter B. Cowan,	Brookville
Lawrence,	Sylvester Shaffer,	New Castle
Lackawanna,	Horace Seamans,	Factoryville
Bradford,	F. D. Kerrick,	Towanda
Sullivan,	E. R. Warburton,	Campbellsville
Berks,	Howard G. McGowan, .	Geigers Mills
Wyoming,	G. A. Benson,	Tunkhannock
Indiana,	S. C. George,	West Lebanon

County	Name	Post Office
Erie,	John J. Rouse,	Wattsburg
Columbia,	A. P. Young,	Millville
Montour,	J. Miles Derr,	Milton R. D. No. 1
Fulton,	Frank Rauck,	Hancock, Md.
Cambria,	L. J. Bearer,	Hastings
Schuylkill,	John Shoener,	New Ringgold
Pennsylvania Branch		
of the American		
Poultry Association		
	W. Theo. Wittman, ..	Allentown
Bee-Keepers Associa-		
tion,		
	E. A. Weimer,	Lebanon

MR. HERR: I want to say, concerning Mr. Bearer's certificate, it is properly certified to, but it is not on the blank form and we want to recommend that he be admitted with the privilege of furnishing the proper blank, filled out, to the Secretary. We had the Secretary with us, who evidenced that Brother Shoener had been properly elected, but the Brother has a wife, and unfortunately she didn't put his certificate in his grip for him, so we recommend that he be seated, with the privilege of furnishing the certificate to the Secretary in a short time.

MR. BEARER: Mr. Chairman, I was present at the meeting that elected me. In the paper from the State Department that the Secretary got, it said there was a blank form in the envelope, but there was no blank form in it, and the Secretary, his brother being sick in Chicago, went to Chicago and there was a pro tem Secretary appointed, but we had no blanks.

A Member: I would like to ask the Chairman of the Credential Committee, if his wife would do the same thing, whether he would lay it to her?

MR. JOEL A. HERR: Whenever that question comes up so that it is necessary to be acted on, I will give you the necessary information. I am not on trial now, and some fellows are receiving more information than they ought to have. Now, Mr. Chairman, I move that the members whose names I have read, that we have acted upon, be admitted to membership in this Board when they complied with the requirements by furnishing the proper certificates. They have all done so excepting my friend Shoener and Mr. Bearer. I think the rest are all here. I move that they be admitted to membership on the Board.

MR. HUTCHISON: I second the motion.

The motion was adopted.

MR. KILLAM: Was the Fayette matter acted on?

The SECRETARY: Since that matter has been referred to, perhaps it had better be made public. The Association that sent a repre-

sentative from Fayette county is not called an Agricultural Association; it is a farmers' organization and engaged in the same work that agricultural associations are engaged in throughout the State. I happen to know the association and know that it is active, and that is the reason I answered as I did.

MR. HUTCHISON: I see here two gentlemen from my county, Mr. Schenfield and Mr. Dauphin, and I move that they have the privilege of the floor.

Motion was seconded and carried.

The SECRETARY: If there is no objection, I think it would be well to proceed with the program, and I suggest that we hear from Prof. J. W. Kellogg, the Microscopist and Hygienist of the Board, for the reason that Dr. Frear is not present this afternoon, and we will hear from him later.

A Member: Before we proceed with this report there are two delegates from the Schuylkill County Agricultural and Horticultural Society, E. H. Kuhlkehl and J. L. Schrader, duly elected delegates to this meeting, and I think their names should be entered on the roll. I handed that credential to Brother Herr and he must have mislaid it.

The CHAIRMAN: Just give their names to Mr. Herr. We will now listen to Mr. Kellogg.

Prof. Kellogg then read this report as follows:

REPORT OF MICROSCOPIST AND HYGIENIST

BY PROF. JAMES W. KELLOGG, *Harrisburg*

A question frequently asked of Microscopists, is: "How is it possible to determine the ingredients of a mixed feed after this mixture has been finely ground and pulverized?" It was thought that an attempt to answer this question would prove of interest to the members of the State Board of Agriculture. In the short time given to our report, it would be impossible to go very much into detail; however, for the purpose of illustrating the method of analysis by use of the microscope, a few cereals such as corn, oats, wheat, rye, barely, flaxseed and their by-products, used in the manufacture of mixed feeds will be considered.

Our First Assistant Chemist, Mr. John S. Spicer, has prepared a number of slides which will be shown, illustrating how the microscope magnifies and reveals the characteristics of the several cereals and their by-products which are used for feeding purposes. A special apparatus is used for preparing such slides which consists of an ordinary microscope, which is first properly adjusted, and then a camera fitted to the top which photographs the picture as shown by the microscope.

Some of the by-products used in mixed feeds and obtained from the cereals mentioned are as follows: From corn: distillers grains, gluten feed, corn bran, hominy feed and germ oil meal; From oats: oat hulls, oat middlings and clipped oat by-product; From wheat: bran and middlings; From rye: bran, middlings and distillers grains; From barley: brewers grains and malt sprouts; From flax seed: oil cake meal is obtained.

The corn by-products are obtained in great quantities from the manufacture of starch and corn syrup. The oat by-products are largely secured from the mills which manufacture cereal breakfast foods; wheat and rye by-products, as is well known, are obtained from the milling of wheat and rye; and the brewers' dried grains and malt sprouts are by-products obtained from the manufacture of beer. The oil cake meal mentioned is the ground cake from the flax seed after the flaxseed or linseed oil has been pressed out.

The principal characteristics of these products as seen under the microscope are the starch grains and the structure of the so called tissues of the seed coat or cell walls. Practically everything which grows has a characteristic cell structure and these characteristics remain constant for a certain cereal to a remarkable degree. Therefore, when an examination of a mixed feed is made the one or more cereals present may be readily determined by one experienced in this line of work, and the presence of foreign material can also be detected. The various starch grains can be prepared for examination by mounting or placing a small quantity of the material to be examined in distilled water. In order to observe the structure of the cell walls or tissues of the cereals, it is necessary to wash out and dissolve the starches, sugars, fats, oils, etc., so that the fibrous structure of the remaining cell walls and fibres may be observed. The low power Binocular Microscope is made use of for examining the general appearance of feeds and seeds. In this way the presence of unground weed seeds and the amount of foreign seeds in seeds for planting, can be detected. If we were to have a Pure Seed law in this State, this would be one of the methods employed for testing the purity of seeds.

In addition to the slides which have been prepared showing the structure of the cell walls and starch grains, a few slides will be shown illustrating the appearance of chicken feeds, as seen through the low power Binocular Microscope.

The first slide illustrates how the pictures are taken. This is a Binocular Microscope, a low power instrument, so arranged that the perspective is shown exactly as seen by the two eyes. In this way we can get the general appearance of seeds, magnified 25 or 30 times. This chart shows the many by-products obtained from the manufacture of starch. I have been advised by one company that fifty million bushels of corn are converted into starch and many by-products, and this is a sort of adjusted chart illustrating where the by-products go to. If you notice, at the top here, the corn kernel is divided into three principal sections, the outside being the hull, the inside the intersperm or starch and the lower inside portion the germ. From the germ, the corn oil is obtained and from that is pressed out the germ oil cake, a cattle feed, and then also from corn oil, after treating with sulphur, a rubber substitute is produced which

is used largely in preparing rubber shoes. Then over here, the starch of course comes out in the many forms of starch; dextrines and sugars are made from that.

Now the gluten feed, which is so extensively used, is composed of the hull and endosperm, or hard gritty part, and some of the gluten and bran tissues going into and composing the gluten feed. This is a picture showing the corn starches, highly magnified. All the cereals have very characteristic starches. In this particular case, we see the corn. They are what is called globular shaped, that is, they are very much like a tennis ball after it has been pressed together. Here you see the irregular outline. Here is the picture of the oat starches. These are very much smaller than the corn starch and appear in groups—these little minute pieces, here. Here we have what is called a picture of the tissues, showing the cell walls. You can see the wavy appearance of the different structures throughout the coat or tissue of the cereal.

This is the wheat starch. You see it is a great deal larger than the corn, and of an entirely different shape, being flat, very much like a silver dollar in appearance, and here are the tissues of the wheat, showing the very enlarged cell walls. You will notice the characteristic difference between this and the rye is that the cell walls in the rye are very much smaller and the ends of the cells are swollen; that's one of the ways in which we can tell the difference between wheat and rye. Of course the starches also give us that information. Here are the rye starches; they are a little larger than the wheat. The characteristic of the rye is they have a so-called hylem—they crack in the center. That is partially due to the drying out of the starch. Here is the tissue of the rye. You can very readily see the difference from the appearance of the wheat tissue. The cell walls are very much narrower, and here you will notice the swollen ends. Here we have the barley starches; they are very much smaller than the wheat starch, much smaller than the rye and also lenticular; they have the shape of a silver dollar, flat and round. Here is the barley tissue.

Here you will see an entirely different picture from that shown for the wheat and rye, also different from that shown for the oat tissue. It is not quite as thin as would be seen under the microscope, but you can see the thick, wavy, cell walls there. Here is a picture of the potato starch. The potato has one of the largest starch grains, and this is shown to illustrate the varying size of the starches from the different cereals and from the roots. This is a picture taken with the binocular microscope. It isn't quite as clear as it should be. This is a good sample of malt sprouts, practically from foreign material. Here is a splendid picture of the malt sprouts which we find frequently filled up with a lot of weed seeds. These black spots are numerous unground weed seeds. This is a slide showing the structure of the flax seed. It has a very characteristic structure. You will notice the round cell-like appearance with the striations running across it. That is very characteristic and can never be mistaken in a mixture with other grades. Here is a photograph on a slide taken from linseed meal which was found to contain a large proportion of weed seeds. In this case you will see these black particles here which don't show the striations nor the

characteristic cell structures nor the seed coats of many of the weed seeds which we find in some feeds. That is a splendid picture illustrating how they can be easily seen.

Now we have a few slides here showing the difference in some of the chicken feeds before and after the enforcement of our feeding stuff law. This is a picture of a chicken feed composed of whole grains which is made by a firm in the west, showing weed seeds here. It is not quite clear enough to show that distinction, but you will find these little very dark portions are the foreign seeds. The slide is not quite clear enough. You can see for instance here there will be a wheat, there probably a kaffir corn and various other grains in here. This is a better slide, showing the vast improvement after the law was enforced and practically driving out the seeds of weeds from the field. Here you see very few of the black seeds. Many of the weed seeds we have are black, especially the blind weed. Here is a chicken feed made by a western firm, showing the weed seeds. You can see very distinctly here these black seeds all through the mixture. Here is a chicken feed made by a Pennsylvania firm, sold for the same price exactly, and you see how free it is from those other foreign seeds. In this case these black seeds happen to be the large buckwheat seeds, which show up very distinctly. I think that will give you some idea of how this work is carried out and how we are able to tell the component parts of a feed after it has been finely pulverized and ground.

The CHAIRMAN: Gentlemen, you have heard this report. What is your pleasure?

It was moved and carried that the report be received and published with the proceedings of the meeting.

The CHAIRMAN: The next, is Sanitation and Health, by Dr. W. Frank Beck, of Altoona, Pa.

Dr. Beck then read his paper as follows:

REPORT ON SANITATION AND HEALTH

By Dr. W. FRANK BECK, *Altoona.*

A report of this kind must be of much importance not only to the farmer, but to the consumer who lives in the city as well; who knowing that he must derive his food supply directly or indirectly from the farmer. He is beginning to realize now more than ever before that his food must come from good sanitary surroundings. If this is not the case he places not only his life in danger, but those of his family. Sanitation on the farm is not what it should be by any means, neither it is in towns and cities, but the country and farm often is held responsible for conveying diseases when the blame should be placed on a filthy city. The police should patrol the alleys where the real danger is and let the streets take care of themselves. Alleys are the great highways on which people travel to the next world.

WATER

Its source and supply is one of the most important things on the farm. This year several epidemics of typhoid have been traced to the farm water supply. It is a most serious question what is the best and safest water for the farmer to use. In valleys where there is limestone soil you will always find typhoid. This is no doubt due to the water which is derived from springs and wells. Limestone soil in underdrained by small caves and water channels. All that is necessary is for typhoid to start in the upper end of such valleys, it is then carried by these underground channels to all parts of the valley and many wells and springs with sparkling water are full of typhoid bacteria. Once this bacteria gets lodged in these underground channels it is a question if one is ever safe to use this water, as heavy rains following a long drought are likely to fill your waterways with typhoid. Wells wherein the water is piped from ridges is mostly freestone water. These water-sheds are well protected by forests. This water is loaded with vegetable matter and when stored in large reservoirs contain vegetable fungi. This water in the summer will often cause sore mouths and produce intestinal irritation causing symptoms similar to typhoid fever.

I must caution you about putting too much dependence in artesian wells. The name to be sure sounds good, but in reality they are very little better than the old dug wells so far as the quality of the water goes. A number of cities will allow this water to be used for drinking purposes. This should not be done. A number of years ago I tested some of this water taken from artesian wells drilled in cities and found in nearly every case that I tested there was more or less sewerage sweeping into this water. The sewerage probably reaches this water in the following manner:

After a time the water which is impregnated with sewerage finally works its way through the earth until it reaches the steel casing which has been driven into the well while in the process of construction. After this takes place the water works its way down along the casing and is combined straight into the well in this manner. This takes place in all artesian wells where the strata of the earth and rock are reflected towards the well and it matters little whether it be very deep or shallow.

The main question is, What is the best and safest water for the farmer to use? A valley where they can pipe the water from the ridge a good distance from the buildings, is indeed a very safe water. This water is mostly safe because we find there is very little typhoid found in the country districts using this water. I would say that cistern water is the only safe water to use in limestone valleys where there are periodical outbreaks of typhoid fever without any apparent cause. When this is properly collected it is in my opinion one of the safest and best waters in the world to use. In fact it is as safe as distilled water. This kind of water must be collected from good clean roofs and all dirt or foreign matter must be kept from the places where it is collected. This water should always be collected from some form of slate or metallic roof. Cisterns should always be made out of cement using one to filter the water into an adjoining cistern.

MILK

So far as sanitation is concerned, milk is much like water and they might be taken up together. Owing to milk being such a fertile field for the growth of bacteria, unsanitary milk becomes a dangerous weapon in the hands of the farmer. It is now positively known that many of our epidemics of typhoid originate right on the dairy farm, probably from a single case of mild form. Once it enters the milk the bacteria grows rapidly. This is why the dairyman is able in a few days to scatter it all along his milk route. Looking at the milk question from this side it will only be a short time until milk can only be sold under the strictest sanitary regulations. The farmer who is in the milk business should use all possible care in the handling of milk. Everything that milk touches after it leaves the cow should be sterilized with boiling water. He should not put his faith in just airing his milk cans, as the warm sunshine on a milk can after it is put in the air often produces just enough heat to make it a fine incubator for the growth of bacteria. I want to call your attention to another thing in this connection. Anyone that is ill should not be allowed to milk or even touch the milk until he has positive proof that he has no typhoid. In not being careful in this, he might be the cause of a dreadful epidemic with all its consequences. Not only this, but he will injure the reputation of the dairy business, besides putting himself out of the business for all time. The past year several epidemics have been traced directly to the dairy farm. Some of these have been in Blair county and the first case I wish to mention is known as case "R." The history of this case briefly stated in something like this:

During the summer of 1911, a young man who had been at the Altoona hospital with typhoid fever, when discharged from that institution went to a farm where he remained during convalescence. In the spring of 1912, Mr. R. purchased a farm and during the latter part of June cleaned out the spring. Early in July one of his boys was kicked by a horse, while recovering from the effects of this injury he appears to have had a mild attack of typhoid fever. Later on one of Mr. R.'s daughters was stricken with the disease and the premises were placed under quarantine. The father and a grown up daughter were permitted to remove to another house and still continue the shipping of milk with the distinct understanding that there would be no communication with the farm house that was quarantined and had the cases of convalescing typhoid. In the meantime another one of the children was attacked by the disease. In September Mr. R. had occasion to go to Martinsburg, and during his absence he had a boy come from the typhoid infected home to assist with the milking. Two or three days later this boy was sent to the Hospital with typhoid fever. The milk shipped by Mr. R. was handled by a man by the name of F. in Altoona, Pa., and on September 25, Mr. F.'s daughter was reported as a suspicious case of typhoid. Two other cases using this milk were reported as having typhoid.

Then the sale of this milk was stopped and an investigation made. It resulted in a discovery of facts that I have related. Down to October 11 of this year twenty-one cases of the users of this milk

were reported, and three of these died. Five of the cases did not receive milk from Mr. F., but it was found that they received milk from a dealer who got a portion of his supply from Mr. F. All, however, coming from the infected farm stated above. During this period there were in Altoona four other cases of typhoid but there was a positive history of outside infection in each case. If typhoid fever breaks out on a dairy farm it is a question in my mind how soon this milk would be safe to ship into the city. If ever it is safe at all, it should not be done until after an examination is made by the State Board of Health, and only after a bacteriological examination has been made of the body discharges of those who had typhoid. The reason for this is that contact infection by carrier cases is now recognized as an important factor in the spread of typhoid. One of these cases was brought to the attention of the Board of Health of Altoona. The brief history of this case is as follows:

During the latter part of August 1909, an outbreak of typhoid or typhoid fever occurred in three of the wards in Altoona on the route of one milk dealer. An examination of the premises of the dealer, showed no probable source of infection. Then an examination was made at the dairy farm at which he received the milk. This resulted in the discovery that on one of the farms, the farmer had had an attack of typhoid in November, 1908. This case had not been reported to the authorities and no action was taken to guard against the infection of the water supply which by reason of its location would, following a heavy rain, be polluted from the privy. The sale of milk was prohibited in the city until certain improvements were made at the farm. Some time later this farmer moved to another farm where the water supply and all sanitary conditions were perfect. During the month of July, 1910, an outbreak of the disease appeared in two more wards in Altoona. The milk supply was again examined and found to be responsible. Again it was found that this farmer was supplying the milk furnished to the infected families. The health authorities then forbade the sale of milk in Altoona by this farmer until an examination could be made to determine whether he or someone else on the farm was not a typhoid carrier.

Nothing more was heard from him until October, 1911, when he requested permission to resume the sale of his product in the city. Permission was refused until an examination was made of the body discharges of himself and all members of his family. The laboratory findings positively indicated that the farmer himself was a typhoid carrier. This man had harbored the typhoid germ for three years. Two months ago, in November of 1912, he was again examined and it was found that there were typhoid germs in his body discharges. I have the record of another important case which occurred about two years ago. I will state it very briefly.

A farmer who sold milk in a city, had about thirty-five cases of typhoid fever appear along his milk route in the best residence section of the city. This was traced back to his farm by the Board of Health. They found two farm hands milking, they were both convalescing from typhoid. They had gotten the bowel discharges scattered over the straw in the yard in which the cows were kept and slept at night. The terrible results of this gross carelessness resulted in the death of twelve people in this city. I cite this case to show

what dreadful consequences may arise when proper precautions are not exercised. The State authorities must take such action and must pass such laws as to make it impossible for such conditions to exist.

Infection may reach the city from another source which I would like to mention. In the suburbs of any town or city there is a growing population brought about largely by the anxious real estate man advertising cheap lots and low taxes without any regard for health and sanitation. People living in these sections generally use shallow wells and privy vaults which are in close proximity. In many cases they have their bath-room connected with a small sewer which opens directly in the street. Many dairy men and small trucksters reside in these localities where the poor water drainage exist. Boards of Health should always be on the alert for infected milk and vegetables that may reach the cities from these sections, at the same time suggesting laws that will better these conditions.

COW BARN OR STABLE

I am sorry that I have not more time to discuss the cow stable. With all that has been said about the cow barn, there seems to be more tuberculosis among the cows of our State than ever. Some man will wake up in the near future and design a proper stable for cows, and when he does it, it will be an open shed with no fancy system of ventilation. The weight of evidence seems to show that our cow barns and cow stables are often hampered more than they are helped by so-called ventilating systems. I do not approve of large herds being kept in the stable under a bank barn, though they may have some system of ventilation. My opinion is that a larger number of cows kept in such stables have tuberculosis than any others. When the herd are small they seem to do fairly well, but when the herd is large they develop tuberculosis. The cow barn should not be connected with the farm barn. The style that I like best is built like the old wagon shed, open at both ends with a goodly number of windows. These windows should be without glass and a covering made of muslin. Stables that are constructed under bank barns are dark and dangerous in every way, not considering the discomfort. The air is heavy, foul, and damp, since there is very little chance for the air to circulate. In cold weather the frost collects on the walls, and during the heat of the day, this frost melts and runs down the walls in little streams. This operation is repeated from day to day, until the litter and everything in the stable is thoroughly soaked. Under these conditions the cows take cold easily and cause much loss to the farmer. All this seems to me can be prevented by the open door house where the sunlight can get near, as briefly stated above.

We are now using the common sense system which is nothing but fresh air for man and all other animals. Let us do the same with the cow, which is more disposed to take tuberculosis than any other.

The CHAIRMAN: Gentlemen, you have heard this paper; what is your pleasure concerning it?

It was moved and carried that the paper be received and placed on file.

MR. JOEL A. HERR: In making the report of the Credential Committee, I neglected to say that these credentials were all for three years from this time except one, and that was Sullivan county, Mr. Warburton, who succeeded a man that resigned, and his service began in 1912, so that his term expires in 1915; the rest are all 1916.

The SECRETARY: Mr. Chairman, the report of the Pomologist was not heard at its regular time. Mr. Tyson is now present, and inasmuch as he was engaged in another meeting, perhaps we had better hear his report at this time.

The CHAIRMAN: We will now listen to the report of the Pomologist, Mr. Chester J. Tyson, of Floradale, Pa.

Mr. Tyson then read his report as follows:

REPORT OF POMOLOGIST

By CHESTER J. TYSON, *Floradale*

It seems to me that a brief tribute to the man who preceded me as Pomologist of the State Board of Agriculture, will be a fitting opening to this report. Gabriel Hiester was born at "Estherton" near Harrisburg, April 28, 1850, son of Augustus and Catherine Cox Hiester. He died at "Estherton," his lifelong home, Jan. 18, 1912.

He attended the Harrisburg Academy, and later Pennsylvania State College whence he was graduated in Science and Agriculture. He returned to his father's grain farm with an interest and a belief in horticulture which remained with him as long as he lived. This faith in his chosen lifework supported him through the planting of orchards and the ups and downs of growing garden crops. In these things he was more than commonly successful, and I have heard him say, "One hundred odd acres returns enough to allow us to live like other folks," which meant all of the necessities and many of the "comforts" of life.

Mr. Hiester spent much time in the interest of education. He succeeded his father as a trustee of State College in 1891, and served until his death. He was a member of the Executive Committee of the Board of Trustees and one of the Advisory Committee of the School of Agriculture. In all of these duties he served most unselfishly.

He was a member of the State Board of Agriculture since 1881, and Pomologist of the Board for several years. He believed in Farmers' Institutes and all other forms of enlightenment for the farmer, and especially he believed in young men who were striving to make a start in horticulture. For them he had stores of good advice and encouragement.

Mr. Hiester first joined the State Horticultural Association in 1872, and his name has been constantly on the roll since 1882. In 1905, and each year until his death, he was elected president, being elected for the eighth term on the evening before his death.

Gabriel Hiester was a man of sterling integrity, broad-minded,

straightforward and fair. This is the verdict of many men with whom I have talked during his life and since his death. Men associated with him in large enterprises and in small ones, buyers of his fruits and produce, employees on his farm, their tribute is the same. His calm, cool, far-seeing judgment has been of immense service to the fruit interests of Pennsylvania. Service with him has been a blessed privilege never to be forgotten.

It is not easy to succeed such a man, and I can only ask the patience which he himself would have shown.

The past year has been fairly good for some fruits in Pennsylvania. The apple crop was about 66 per cent. of the previous year's crop and was borne most heavily in the north and west sections of the State, with a good scattering of fruit throughout. Apples have been mostly good size in this State, and the quality in general has been better than usual.

Demonstration and instructional work have been carried on throughout the State and it is rare to meet a man who would be classed as a fruit grower who does not know the commoner insect pests and the simplest means for their control. "Greater thoroughness in carrying out the things we already know," is the keynote that should sound through all the teachings of the coming year. Very few of us have gotten down to real thoroughness in our work. Nature has been too kind and as a result not one in a hundred has followed the careful methods that have been forced upon our brother growers in the far northwest. There is hardly a shade of doubt that the same thoroughness in pruning, cultivating, spraying, and thinning would pay right here.

The planting of apple trees in the past five years has gone a wild and reckless gait. There are strong indications that it is slowing up and that less planting is being done. In our teaching and in our daily talk let us advise less planting in the near future, and better care of the orchards now growing. Some tremendous crops of apples are in store for the country within the next ten years, and then only the very best grown fruit can possibly show a profit. The lower the percentage of second grade fruit you are growing, the safer you will be when that time comes.

Many real estate development schemes based on orchard planting have been started in the east in the past year or two. Capital from our cities and towns has been persuaded into these schemes and some of them are doing a flourishing business, in the sale of land at least. As legitimate growers, it is our duty to advise against investments in such stocks and lands, unless the investor knows without any question, that the location and soil are right and that the right man will be on the job.

The difference between the price we have been getting for our fruit and the price paid by the retail buyer in the city, is and has been, too great. Careful investigation seems to show that a very large part of this difference is represented by the retail dealer's profit. As a general thing, he prefers to make two or three hundred per cent profit on one barrel rather than thirty per cent. on ten barrels. You can easily figure the result to the consumer of fruit and the effect it will have on consumption. The International Apple Shipper's Association, the national organization of wholesale apple

handlers, has started a campaign to persuade the retail dealers of the country to change their policy, to make apples their "leader" at a reasonable profit, thus drawing trade to them and helping all around. We can well afford to spend some time and money in helping this campaign. If it can be carried through it will benefit the whole apple growing industry immensely.

I have pointed out just a few things that I hope the members of this Board will take home and think over, and when the time for action comes I trust that they will be ready to do their share.

The CHAIRMAN: Gentlemen, you have heard this report; what will you do with it?

It was moved and carried that the report be received and placed on file.

The SECRETARY: Mr. Chairman, I am very sorry to be on my feet so often, but Dr. Dixon has just come in and he has kindly consented to talk to the Board for a little while and I know we will all be glad to hear him. He is such a busy man, that he cannot remain very long. He has had to leave another engagement to come here and I think it would be well to let him have the floor at the present time.

The CHAIRMAN: We will now listen to an address by Dr. Samuel G. Dixon, Commissioner of Health, Harrisburg.

Dr. Dixon then delivered the following address:

ADDRESS OF DR. SAMUEL G. DIXON

Fellow Naturalists: I feel quite at home here with your honorable body because I am so interested as a farmer, a gardener, a breeder of domestic and wild animals and a dairyman. The dairyman has my sympathy for I know how hard it is to keep a herd of thoroughbred cattle and make it pay financially. I have learned, however, that the health of the animals means much to the exchequer. Not only does this apply to the animals but also the help employed. The prevention of disease does not only save us from physical and mental suffering and untimely death but it has also its economic side to which fact our great industries are awakened. The agriculturist, the horticulturist, the livestock breeder and the dairyman are all awake to the necessity for fighting the diseases which destroy their crops and their herds. They believe in quarantining and disinfecting their animals and stables. They realize the necessity of furnishing the proper sort of food stuffs—grass, corn, oats, wheat, rye, alfalfa and other plants—that the colts, calves and lambs may live and develop into large, healthy marketable assets. The dairyman appreciates that his cows to be profitable must have food stuffs which contain plenty of albumen, starch and fats in order that they may retain their health and produce a reasonable quantity of well balanced milk for human consumption.

To make a success of your various professions you fully realize the necessity of breeding from healthy animals, plants and seeds. You know how essential it is that they have their respective demands for food, fresh air and sunlight supplied. You realize the importance of keeping your animals and vegetables away from those infected with disease. You must measure their respective demands for heat, light and water. You have learned to appreciate what the surgeon and doctors can do for your animal and vegetable friends. You fully realize the importance of prevention, that it is much easier to keep tuberculosis out of your herds than it is to eradicate after they have once become infected. You have made a study of the lower forms of life in order that you may bring them to their highest state of perfection and that they may yield you the greatest profit. What for? That you may bring around you those comforts which will enable you and those who are dear to you to better enjoy life.

While engaged in this splendid work, how much time have you given to solving the problem how best to preserve your own health and to rear healthy children, that they may grow up with strong bodies, happy dispositions, and clear, able minds, that they may be a credit and a profit to society and the nation?

To best accomplish this one of our greatest ambitions, we must be careful not to marry those who are diseased, to do otherwise would not be just to ourselves, our children or our country. We should provide healthful homes for our families well outside the congested and closely built cities. The home should have a dry cellar with as many sides exposed to the light and air as possible. The windows should be large so as to furnish abundant ventilation and at the same time permit the entrance of the sun's rays which should not be excluded by shutters or curtains except possibly for a few hours of the mid-day in very warm summer weather.

The house should be heated with open fire-places or large stoves, or, better than either, with indirect hot water or steam, but the latter two methods without the ventilation from the outside air flowing in over the radiator in the cellar or room are deadly, because without this, you breathe and re-breathe the vitiated air, the oxygen of which has been used up and the air has been poisoned with organic matter.

Pure water is essential to good health. Water polluted by house sewage will sooner or later bring disease to the majority of those drinking it. Pure food stuffs with proper proportions of proteins, carbohydrates, fats and salts are necessary to build up and keep up healthy bodies. Among the great protections against tuberculosis are robust health, proper food, plenty of out-door air and moderate physical exercise. To avoid the different communicable diseases you must keep away from those sick with them, otherwise you will be exposed to and may become infected with the same germs that have already struck down the weak person with whom you have come in contact.

The only protection against smallpox is to have had the disease or to have had a resistance built up by vaccination. In other diseases such as diphtheria we can only produce immunity for a short time. We can, however, cure it almost every time if we get the antitoxin introduced early enough. In scarlet fever we do not have any anti-

body to protect our children against this dread disease. Strict quarantine is our only protection. People sometimes have an odd way of looking upon quarantine and object to being placed to the inconvenience that their neighbors and the general public may have their personal liberties to go about their usual vocations. Those who object to having scarlet fever quarantined might as well object to the police placing a would-be murderer in jail.

Measles is a very communicable disease, and one from which Pennsylvania lost more children in 1911 than she did from scarlet fever. Measles is not infrequently followed by tuberculosis, therefore, every care should be taken to avoid it in childhood. The danger of contracting it decreases as we grow older.

Malaria can only be produced through the bite of the mosquito (*anopheles*) therefore by proper drainage and the introduction of sun and other fish we can generally protect ourselves from that disease, unless our home is situated in the immediate neighborhood of swamps too large to drain. I have often been told by people that they had done everything to rid their homes from mosquitoes, when upon a visit to their homes I have found rain barrels alive with the larvae, or sometimes would find tomato cans filled with water and mosquito larvae.

Flies which are bred in manure piles are carriers of typhoid fever when they have access to the typhoid fever infected injecta. The biting fly found mostly in or near horse stables is now believed to produce infantile paralysis, therefore the manure should always be used as soon as practicable. One of the greatest protections against the fly born diseases after every effort has been made to reduce them to a minimum, is to thoroughly screen our homes.

I have mentioned a few diseases and suggested methods to prevent their occurrence just to give you an idea of what can be done with our present knowledge of diseases, their causes, and the methods to prevent them; and that you may appreciate what you can all do to protect against diseases, if you will consult your physicians how to keep well and apply their advice as you do your knowledge of animal and plant life and the methods to keep them well.

It is beyond my understanding how the people of this State until a few years ago quietly submitted to the common enemy, typhoid fever, making 24,471 of our people in Pennsylvania sick each year and killing 4,000. Why if we had lost 50 lives from yellow fever we would have fled from the State.

If the English had landed some of her army on our shore and shot down a few of our people, the entire nation would have been in arms and untold appropriations would have been made to wage war against the enemy; yet with this preventable disease in our midst we just sat down and let it kill us off by the thousand each year. We knew that it was a water-born disease, brought about by a filthy habit of disposing of human waste into the streams from which our drinking water was taken. It is hard to conceive of intelligent people falling into such a filthy habit and then drinking the water which, in many cases, was filthy sewage.

In 1905, Dr. Charles B. Penrose of the University of Pennsylvania, awakened to the fearful condition of our streams in the State which was causing so much suffering, sorrow, death and interference with

our industries, and prepared a bill creating a Department of Health and placed the responsibility of correcting the filthy habit of polluting our streams and killing our people upon the Governor, Attorney General and the Commissioner of Health and had it presented to the Legislature of that year. It was appreciated by the General Assembly and the Governor and became a law of our great State.

For over seven years the Department of Health has been laboring under said Act of Assembly to correct the great evil as fast as practicable so that the change might be brought about by as little expense to our people as possible and without interfering with our industries.

Today I am happy to report to you who have done so much to promote the annual and vegetable life of this Commonwealth that, instead of having in 1912, 24,471 cases of typhoid fever, we have had only 8,194, and that instead of having 4,000 deaths we have only *one thousand*. Our statistics in other diseases also show a great reduction in deaths.

These most gratifying results to those who have had the great responsibilities have only been possible by educating the people so as to get their co-operation and the following up the different diseases by the Divisions of our Department. Laying aside the saving of suffering, sorrow, doctors' and nurses' bills, the work in typhoid fever alone means a saving to the State of some \$15,000,000 a year.

Now, gentlemen, what we ask of you is to liken your work to ours, and before you leave here make up your minds to co-operate with us in trying to improve the physical bodies of our men and women and save them from unnecessary sickness and death.

It is in your power to help us teach the people what our work means to them and you can also influence your local Boards of Health to keep pace with us. We could not have shown the grand results obtained if many of the local Boards of Health had not done magnificent work. There is much to be done, however, to bring up many poor Boards of Health which still permit disease to have its own way. As civilization has advanced and transportation facilities by land and water have been extended, the development of every nook and corner of the State has followed in proportion as the resources for the district warranted, until now, Pennsylvania, with her 30 cities, 930 boroughs, and 1500 odd townships and 8,000,000 of people, is thickly populated. Contemplating the fact that the noted natural resources of the State are becoming rapidly exhausted, that the output of natural oil and gas is diminishing annually, and that the time when her anthracite and bituminous coal fields will cease to supply the demands of the country is easily forecasted, it does not take the sober mind long to grasp the idea of the importance and necessity to the welfare of the people of the Commonwealth of the adoption of a plan of conservation of the soil and water resources.

Blessed with favorable geographical position and topography, with a favorable climate, and diversity and richness of soil, with good harbor facilities on Lake Erie and the great port of Philadelphia on tidal water, and rich in water power to be conserved and utilized, there is no reason why Pennsylvania should not maintain its prestige if it will husband its resources. And I have particularly in mind the soil, forests and the streams,

As the population increases we must conserve all our natural resources, and particularly, vegetable and animal life. Not only should every bit of available land be in cultivation, but be worked under the guiding hand of those up in modern scientific direction.

To keep the supply up to the demand, we must bend our energies to educate our young men in applied natural sciences. We must encourage our young men to take up the honorable and interesting work of agriculture, horticulture, animal industry and dairy farming.

The CHAIRMAN: Gentlemen what will we do with this report?

It was moved and carried that the report be received and published with the proceedings.

A Member: I believe there was a Committee appointed on Special Legislation. It might be well to hear from that Committee now.

The CHAIRMAN: We will listen to the Report of the Committee on Legislation at this time. Mr. J. Aldus Herr is chairman.

Mr. Herr read the report as follows:

REPORT OF THE SPECIAL LEGISLATIVE COMMITTEE OF THE STATE BOARD OF AGRICULTURE.

Your Committee recommend to the State Board of Agriculture the following items of legislation which they deem worthy of their consideration and submit the following:

DEPARTMENT OF AGRICULTURE

Contingent Fund 2 years, \$15,000; Bureau of Statistics 2 years, \$40,000; Farmers' Institutes 2 years, \$55,000; Field Councillors and Demonstration Work 2 years, \$40,000; State Board of Agriculture 2 years \$2,500; Special Examinations 2 years, \$10,000; Fertilizer Control Work 2 years, \$57,000; Feeding Stuffs Control 2 years, \$35,000; Insecticide Control 2 years, \$10,000; State Bee-Keepers Association 2 years, \$2,000; Apiary Inspection 2 years, \$3,000; Deficiency Keystone State Fair, \$8,500; Linseed Oil Inspection 2 years, \$7,000; State Fair, \$500,000; Pennsylvania Livestock Breeders' Association 2 years, \$2,000; Pennsylvania Dairy Union 2 years, \$2,000; State Horticultural Association 2 years, \$2,000; State Poultry Association 2 years, \$2,000; and adequate appropriation to carry on the work of the Division of Zoology.

Not having the complete budget of the State College before us, we recommend that they receive liberal appropriations in amounts sufficient to carry on their work in an efficient manner.

We further recommend the passage of a law regulating the purity of grass seed.

J. ALDUS HERR,
W. E. PERHAM,
M. P. SHOEMAKER,
SYLVESTER SHAFFER,
I. A. ESHBACH,
Legislative Committee.

MR. HUTCHISON: I don't like to try to ammend the report, but say grass seeds; it should be grain and grass seeds.

MR. J. ALDUS HERR: That was a mistake.

MR. HUTCHISON: The State College is asking for \$1,800,000.00; that's the item passed last night by the Legislative Committee and the Board of Trustees.

The SECRETARY: My attention was called away from the reading of the report. I would like to inquire whether you said anything with regard to the orchard demonstration work?

MR. J. ALDUS HERR: No, we did not. Not having the budget I couldn't say exactly.

The SECRETARY: Was it the purpose of the Committee to include in your report the amounts that had been approved by the Agricultural Federation?

MR. J. ALDUS HERR: Not necessarily the Committee of itself, that is, the Special Legislative Committee, where it says, "Not having the complete budget of the State College before us, we recommend that they receive liberal appropriations," not stating the amount.

The SECRETARY: But I was speaking of the appropriation made for carrying on the orchard demonstration work. I would be very glad if the Committee could amend the report so as to recommend suitable appropriations for continuing orchard demonstration work.

MR. J. ALDUS HERR: And mention the amount?

The SECRETARY: Well, if you are not prepared to mention the amount, you could recommend suitable appropriations for that work as its needs may require. I am not able to recall, just now what our own agricultural budget had put down the amount at, and therefore I could not give it to you.

MR. J. ALDUS HERR: When is that Committee to report?

The SECRETARY: I would be very glad if you would amend your report so as to provide your endorsement for suitable appropriations to the Department of Agriculture to continue the work of orchard demonstration as it has been carried on in the past. In order that that matter may come before the Board, I move that the Report of the Committee be amended by inserting after the word "In an efficient manner," "We also report suitable appropriations for continuing the work of orchard demonstration as it has been carried on in the past."

Motion seconded.

A Member: Isn't that included under the item of field demonstration there?

The SECRETARY: Well, that was not the thought of the committee, was it?

MR. WEIMER: Mr. Chairman, I wish to ask for a further amendment; that is, there was no provision made for the poultry interests. There was also an appropriation asked for \$2,000.00. I see the beekeepers got it and the livestock interests, and I think the poultry men are entitled to that, too. I make a motion that the chairman of that Committee take until the meeting to-morrow to amend that report and get the items from the budget.

The CHAIRMAN: I think there is another motion before the house.

The SECRETARY: I am very willing, if I have the consent of the Board, to withdraw my motion unless the motion before the house be the one that has been offered by Mr. Weimer, of Lebanon county, with just this little change, that the report be re-committed and that the committee be requested to report at some time to-morrow. I do this for the reason that I have no doubt that some of the things that have been left out of the report would have been considered by the committee if their attention had been called to them. If that be your motion, I second it.

Mr. Weimer's motion was then adopted.

A Member: As that business is through now, I rise to make a report that I am sorry I have to make and many more of you will feel sorry. I want to report to you the death of one of our members, one of our Advisory Committee and Executive Committee, who died last July, Mr. A. T. Holman, of Millerstown, who has been a member of the State Board of Agriculture for many years, and a very efficient member. He always tried to perform his duty wherever he was placed, and I would move you that a committee of three or more be appointed to draft a resolution in regard to the death of our member, Mr. Holman.

The motion was seconded and adopted.

The CHAIRMAN: I will appoint the committee this evening, at the next meeting.

The SECRETARY: In the minutes that were read at the opening session this forenoon, attention was called to the fact that a Committee had been appointed at the May meeting to confer with the Secretary, myself, in relation to certain matters pertaining to what should be done in case persons elected by the Agricultural Societies, should not attend the meetings of this Board. Is that Committee ready to report?

A Member: The Committee has met and acted, but Mr. Blyholder has the report and I understand he is attending another meeting at present.

The SECRETARY: The other item in the report was that the Secretary had been authorized or had been directed to write to the Agricultural Associations of the counties throughout the Commonwealth in relation to the importance of their being represented upon the Board, and calling their attention to the fact that the persons elected did not always appear as members of the Board. I wrote that letter, and, if it be your pleasure, I can let you know what I did write. I don't care to read that letter unless it should be called for, but if you want to know what I did write to them, I shall be glad to let you know.

The CHAIRMAN: Gentlemen, will we have the letter read?

A Member: Mr. Chairman, in connection with the deaths for last year, Prof. Buckhout has passed away, and wouldn't it be wise to appoint a committee on his death also?

The SECRETARY: I think that it might be tacitly understood that the Committee already appointed will be a general Obituary Committee, and will consider any matters of that kind that may be brought before them. If there is no objection, shall that be the understanding?

The CHAIRMAN: Yes, if there is no objection, it will be appointed as a general committee on that subject.

MR. HUTCHISON: The President of the Pennsylvania State Veterinary Association handed me one of their programs, saying they had not been included on this list in the combined program, and asked to have it announced here that their meetings are in the Cameron Building, corner of Second and Walnut streets, Harrisburg, and they would be pleased to have any of you come there who have any time to spare to attend their meetings. They have a very good program, and I have no doubt, good, interesting speakers, and will be glad to have any of you call any time at their meetings. I have only the one program, but you can secure others by calling on Dr. Marshall or at their meeting place in the Cameron Building. It is the State Veterinary Medical Association. At one time we called them horse doctors, but now they've got scientific names. They are the men who are looking after that work in Agriculture.

The SECRETARY: Mr. Chairman, I see that Mr. Blyholder has come in. The Report of his Committee was called for—the Committee to confer with the Secretary.

The CHAIRMAN: Mr. Blyholder, are you ready to report now?

MR. BLYHOLDER: I had to leave the hall for a little while,

and for fear you might call for that report, I gave it to Mr. Fenstermaker so that he could make the report in my absence.

(Mr. Fenstermaker was not in the hall).

The CHAIRMAN: Perhaps he had to leave too.

The SECRETARY: I move we adjourn.

The motion was carried and the Board adjourned until 7:30 P. M.

JOINT MEETING OF BOARD OF AGRICULTURE, BREEDERS' ASSOCIATION AND HORTICULTURAL ASSOCIATION

The joint meeting of the State Board of Agriculture, Breeders' Association and Horticultural Association, was called to order at the Board of Trade Auditorium, Tuesday, January 21, 1913, at 7:30 P. M., by Mr. Chester J. Tyson, Secretary of the State Horticultural Association, and it was moved and carried that the Hon. N. B. Critchfield, Secretary of the State Board of Agriculture, preside over the joint meeting.

SECRETARY CRITCHFIELD: Ladies and Gentlemen: I always esteem it an honor as well as a pleasure to preside over a body of my fellow-citizens, and especially do I feel it an honor to preside over such a body as I see gathered here this evening. We are all interested in the same great cause, the greatest, perhaps, that can attract the attention of the citizens of any commonwealth. We are here to "boost," if you will allow me to use a common expression, the interests of agriculture of this great Commonwealth. Our purposes are one, and I hope that during our sessions we will be able to act in perfect harmony, and that, when we go away from here, we will go, realizing that it was a good thing for us to come to these annual meetings.

I am now ready to proceed with the business of the meeting. I think perhaps it would be well that we should have a Vice-President or two, and, possibly, there should be designated a Secretary. If you begin with the designation of a President, I don't see why you should not elect all the officers. Do I hear a nomination for Vice-President? I don't like to sit up here alone. How do you know but what somebody will want to call me down to say something to me after a while and I must have someone to leave in the Chair.

A Member: I nominate Mr. J. H. Peachey for Vice-President.

The nomination was seconded, and Mr. Peachey was unanimously elected.

A Member: I nominate Mr. Moses Vaughan as Vice-President.

The nomination was seconded, and Mr. Vaughan was unanimously elected.

The two Vice-Presidents then took their seats on the platform.

The CHAIRMAN: I am very much obliged to you gentlemen for providing that I shall have good company. Shall we have a nomination for Secretary? The Secretary's duties are not going to be very onerous, because we have a reporter here who will take care of things, and yet he may want to have an assistant. Who shall be your Secretary for this meeting?

A Member: I nominate Mr. Dorsett, of Tioga county, for Secretary.

The nomination was seconded, and Mr. Dorsett was unanimously elected and took his seat on the platform.

The CHAIRMAN: The first item on our program for this evening, is an illustrated lecture on "Agricultural Progress in Pennsylvania," by Prof. R. L. Watts, of State College, Penna. I now have the pleasure of introducing to you one who needs no introduction to an audience of Pennsylvania farmers. Prof. Watts will have the floor.

Prof. Watts spoke as follows:

AGRICULTURAL PROGRESS IN PENNSYLVANIA

By PROF. R. L. WATTS, *State College, Pa.*

Mr. Chairman, Ladies and Gentlemen: I look upon it as a very great pleasure to come before an audience of Pennsylvania farmers and citizens of the State who are keenly interested in the development of agriculture. I feel that my friends are with me here on the platform and in the audience. A member of one of these Associations approached me some time ago at State College and said they wanted me to speak on this occasion and suggested a topic. They wanted to know something about the agricultural work at State College, and I assumed that that would be my topic until I arrived at the Auditorium and got a copy of the program and found that the topic was, "Agricultural Progress in Pennsylvania," so I shall first have a few remarks to make about agricultural progress in Pennsylvania; then I will comply with the request of the members of one of the Associations and speak more specifically of the work in agriculture at State College. I rather like the sound of that term, or the topic that has been assigned to me, "Agricultural Progress in Pennsylvania." That sounds mighty good to me.

I was raised on a farm in this State, then went away to State College and took a course in agriculture. I had the jeers of students there who were not interested in agriculture. There were just four of us in the College. I have always believed in the agriculture of the State and it grieved me to see how little attention was given it; and now I am delighted with the splendid progress agriculture is making in Pennsylvania, and I cannot help thinking of a story I used to tell at one of the Farmers' Institutes. It is a

chestnut, but you know the chestnut is about the sweetest of the nuts, and so I shall tell this story because I think it comes in so properly here tonight. I see my friend Hutchison smiling about a certain story he worked off on me one time, but here is the story I used to tell about a certain farmer out in the western part of the country. He had milked the cows one evening and carried the milk to the springhouse and poured the contents of the pails into cans that were used to ship the milk to the city. He then returned to the barn, got a team and wagon to convey the milk to the depot. During his absence from the springhouse, three frogs got into a can of milk. The farmer returned, but didn't see the frogs, and the covers were put on the cans and the cans taken to the depot. After a time, while the milk was on the way to the city, two of the frogs engaged in a discussion. "We are in a sad plight; how can we get out?" "I don't see that there is any possibility of our saving our lives; therefore we might just as well fold our feet and go to the bottom, dead frogs." And that's what they did. But the third frog reasoned that as long as he had life, there was no use giving up, and he began to kick and kicked so hard and so long and so persistently, as the train traveled along, that he finally churned a great chunk of butter, onto which he jumped and rode into the city and thereby saved his life. Now there has been a great agitation of agriculture. For ten years there has been an agitation of the question and there are hosts of people in and out of the city that seem to think this big chunk of butter has been churned and now it's time to hop on and take a ride and save their lives.

I had a letter recently from a man in New York, who owned some land on Long Island, and here is the question he put to me; he wanted to become a farmer: He said, "I have three thousand acres of land on Long Island. Do you suppose it would be possible for me to put a man on that farm who understands his business (and, of course, we all understand our business as farmers), do you suppose it would be possible to put a man on that farm and make a clear profit of three hundred dollars to the acre on three thousand acres of land?" He was sincere. He meant what he said. He thought he could go out there and harness that up and get that sort of return. Another man in Philadelphia, who was getting a salary of a hundred dollars a month, wrote this letter: "I am getting a salary of a hundred dollars a month. I have saved twelve hundred dollars. Would you advise me to give up my position and go to the country and buy a farm and be a farmer?" He was a dentist, but his income amounted to a hundred dollars a month, and he thought he could take twelve hundred dollars and go out in the country and buy a farm and turn right in and make a living at farming. What sort of success do you suppose I would make to go off to a shoe shop and undertake to make shoes? What sort of success do you suppose Secretary Critchfield would make to go into a harness shop and undertake to make harness? What sort of success do you suppose the best farmer in this audience would make to go into some sort of factory or other and attempt to do something? We wouldn't expect to succeed, but a lot of people in the city think all they need is to go out and buy a farm and harness it up and make a living. There is no more erroneous idea going over the land today. Our city friends don't realize the fact that farming is one of the most com-

plicated businesses and that they cannot expect to succeed without capital and experience, but that has all come from this agitation. They think the big roll of butter is right here ready to jump on and make a living and make it easily.

I want to make an inventory of the forces, tonight, at work in Pennsylvania for progress. I want to take stock. What are the forces behind this agricultural movement in Pennsylvania? There are some powerful forces and there will be other powerful forces to get behind this splendid movement for the prosperity of agriculture in Pennsylvania. Let us take stock, first, of those forces that we have had for a considerable length of time.

The first is the Department of Agriculture in Pennsylvania. I need not refer to the splendid work accomplished by the State Department of Agriculture, the part that the Farmers' Institute movement has played in the development of agriculture, and all the other forces that have been at work for years, powerful forces. And then we should mention the State Grange. It has been and will continue to be a powerful factor in the development of Pennsylvania agriculture. And then we have the agricultural papers, the press.

The agricultural papers have been coming into our homes as far back as I remember. When I was ten years of age, I recollect the Farm Journal, which came every week, and when a mere lad, I remember looking forward to the coming of that farm paper into the home every week and other papers that I don't need to mention, that have been powerful forces in the development of Pennsylvania agriculture. Then we have a large number of farm organizations that have been more active in the last ten years than formerly. I don't even need to mention them. Three of them are represented here tonight: The Livestock Breeders' Association, the State Horticultural Association, the State Bee-keepers' Association and others, that have definite, specific purposes, and I want to go on record as saying that the organizations which have distinct purposes should be maintained and helped to continue as factors in every possible way. I think, so far as possible, these organizations should be self-supporting. I believe a man will derive greater benefit from an organization when he puts down his dollar or two dollars or whatever the membership fee may be, and the membership should be so large that these organizations will be self-supporting as far as possible. We ought to have, in the Horticultural Association, two or three thousand members, and the same is true of the other organizations that we have organized for a specific purpose. I want to say that, as members, we should be more active in promoting the work and then let the State come in with a second appropriation, if necessary so that the results of these meetings may be published, so that prizes may be offered and these organizations carry on their work to the very best advantage. Let us see that these organizations for specific purposes are fostered and cared for.

We have one other factor that has been in existence a long time, that I shall speak of more definitely in closing my address—the Pennsylvania State College. Your College, not mine, not President Sparks', not the trustees', but the Agricultural College of Pennsylvania, or rather, the School of Agriculture of the Pennsylvania State College. That belongs to the people of this State. It has been and will continue to be a powerful factor for the progress of agriculture in this State.

There are other factors that have come into play more recently that I want to speak of in making this inventory of forces, a large number of factors. Let us see what they are: The conservation movement that has been on so vigorously for the last few years—I want to say that has been a powerful factor in Pennsylvania, and that the farmers are thinking today more about the conservation of our soil than we did ten or fifteen years ago. We have the idea in mind that it is not only our duty to care for that soil so that we will be able to make a living, but to handle it in such a manner that our sons will be able to make a living. We are thinking more about the forests and about the fire-devastated acres of Pennsylvania than we did ten years ago. It grieves us more today to see the fires sweep over the mountains of our State than it did ten years ago. We are thinking more about the conservation of the forces wrapped up in our boys and girls today than ever before. The conservation movement is doing great good for the agriculture of Pennsylvania and will continue to have a tremendous power.

I shall next mention the schools of the State, because I cannot speak very enthusiastically about the schools of Pennsylvania as a factor in the development of agriculture up to this time. I went to a little school in this State, a school of three windows on each side. I got my college preparatory course in that little school more than any other place and it stands there today. Today that little school is not a particle better or stronger in any respect; it is no more a factor in the prosperity and development of agriculture in that community than it was forty years ago. I wasn't at school forty years ago, but I had brothers there and I had sisters there, and I will repeat that that school is no more a factor in that community now than it was forty years ago, and I could name other schools that I know in Pennsylvania today, that are no stronger and are exerting no more influence now than they did years ago. This statement which I am making must not be too sweeping. I realize that there are schools that are doing something for agriculture, but the schools as a whole, in Pennsylvania, have not done a large amount of work for the agriculture of this State.

Now then, that is up to this time, mark. Let us look forward. The schools of Pennsylvania are going to do a great work for the agriculture of the State and I shall have something more to say about that a little bit later. The telephone is a great factor, a very great factor. Most of the farmers in the State have the telephone and they know what it means. It is a great factor and we must recognize it as a factor. Transportation is a great problem today. I don't know of any problem in connection with our rural development work that is receiving more attention than of transportation,—it is so far-reaching. We fought a good many years for the Parcels Post; it took us a good while to get it. We have got it. Are you using it? Are you getting any benefit from it? I am. I am not farming, either, but I am getting benefit from it. I have an aged mother living in Clearfield county, and I sent her a box of flowers the other day from the College greenhouse, (which I paid for, I want you to understand). I sent those flowers by Parcels Post and I believe the cost of the transportation was about 12 cents. They arrived in perfect condition. We were so pleased with the experiment that I will try it again. Now then, are you using the Parcels Post as much as you might? We fought for it. Are you using it? That is a

movement we started and I believe it is going to do a great deal for the country. Then the Postal Express that we discussed at the Grange conference. I believe that will come and that is going to help us. That is one of the factors that will help us in our agricultural work. And that road question—oh, if I just had time to talk on the road question for about an hour! You have never heard anything about that, have you? We might discuss the bond issue and the tax question and a good many other things, but, of course, we are going to have good roads. It is more difficult to keep from being skeptical on the road question than anything else. We have got to exercise more grace over the road question than anything else. We see a road a year or two years that isn't as good as when it was first built. One faction wants to issue bonds and somebody says, "Tax the people a little bit more," and another crowd says, "Use the road drag; what better roads are there than the roads back in the woods?" But we are going to have better roads and it is going to help us.

That brings up another question and that is the part that the automobile truck or motor truck is going to play in the development of agriculture in this State. I feel rather enthusiastic about that. I used to be a market gardener and sent to market every day three wagons with six horses to those wagons, and I know something about the expense of marketing produce over rough, hilly roads and hauling the produce long distances. What is the automobile truck going to do? I will tell you what it has done for one New Jersey man, over at Glassboro, where Albert Rhett lives. He has replaced eighteen horses with one motor truck; one automobile truck has taken the place of eighteen horses. He lives eighteen miles from Philadelphia. He sent produce every day on that automobile truck, twenty tons, five tons every trip; and the feeding and care of those horses and the large number of market wagons, large quantities of harness to be kept up, and a whole lot of drivers and the time it took to get to market—all that has been done away with. I might mention other men tonight who have done exactly the same thing and taken their produce to market by the motor truck and transported it much cheaper than they had been doing by teams. So that is going to be a factor that we will have to reckon with in the future.

Now I want to speak on the question of clubs. You know the club is being used these days to try to force us into all sorts of things. All kinds of clubs are being organized, but what I have in mind, particularly, tonight, is the corn club, the potato club, the strawberry club and the flower club, and clubs of that sort. I believe that Pennsylvania in five years from now will have fifty organizations of that kind where we have one today. The Western states have caught the spirit and this work has been started and is doing a powerful work, especially among the boys and girls of the West. Let's have the same movement right here in Pennsylvania. I don't care what movement starts it, whether it's the Department of Agriculture, the County Grange, the County Fair or some local organization; let's have organized clubs everywhere and offer prizes and encourage the boys and girls to produce the best they can under scientific management. It will raise our standards and ideals.

You heard what Percy Cloud has done in Chester county. He is the boy who came up to State College and took a winter course there and took the first prize at Columbus. He came back home.

People heard about it and said, "I wonder if I can't get some of that seed corn of Percy Cloud's," and they went over to his place and saw that corn and saw it was better than they were growing, and their ideals went up and an old farmer said, "I have been growing corn all my life, but I never saw corn like that," and the first thing you know that boy was selling seed corn throughout that community. I want to bring out, not the profit that came to Percy Cloud, but the uplift that came in that community because of the prize he won. Then we begin with the boys and girls, if we want our agriculture to prosper in the future.

Now, the State Fair—that is going to count for progress. We are going to have a State Fair. It will be a great factor for the development of agriculture in this State and I hope every man here will work hard for the State Fair. We ought to have had it long ago. Then we have the County Expert Movement, these men who have been trained to advise men who need advice. I don't like that term "expert" very well and I think there are plenty of farmers who are more expert than the men who are sent out and called experts or advisers; but don't lose sight of this, that the boy who has good high school training, gone to college and spent four years—that during that course of four years he has been compelled to study the fundamentals, the underlying principles upon which agriculture founded. That boy may not be able to go to your farm and tell you how to plough better than you have been ploughing, or how to seed better than you have been seeding, or how to prune better than you have been pruning, but he can tell you how to compute variations in fertilizer formulas and what kind of lime to buy and what effect it will have on your soil. He can bring to your place the science of agriculture, although he may not be as practical as you. I understand, though, and not one of these experts, as they call them, are ever put on this county work unless they have been raised on the farm, so they have had practical training, but the point we want to make is that they are bringing the science of agriculture as they have picked it up in the college and that it is yours if you want it. They don't force that advice upon you if you don't want it. They are there to help you if they can and it is your privilege to call on them. And one other point; these experts can fall back on the force that is behind them for additional information, if they don't possess it themselves.

Co-operation will do a large amount, will accomplish a great thing for the agriculture of this State. We are not co-operating very much today, there is no question about that, but in the years to come there will be co-operation in many respects; co-operation on the question of farm crops, perhaps, co-operation in the buying and selling of supplies or produce. And right there I believe perhaps more will be done than along any other line. Co-operation in the selling of our produce. How many of you heard the Congressman at the Grange Conference yesterday telling his story of how prices increase from the time the produce leaves the farm until it gets into hands of the consumer? I might relate a little experience I have had along that line in finding out just how the prices increase. Two years ago I went to the Kalamazoo celery growing district and I found the farmers were getting ten cents a dozen from the packers of Kalamazoo. I came home and found the merchants at State College were selling that same celery at five and ten cents a stalk,—from 72 cents

to \$1.20 a dozen for celery for which the producer received only ten cents. You men know as much about that as I do. You know how prices increase through this long line of middlemen. They say, "Hasn't the merchant got to live? Are you going to put them out of business?" Why yes, put them out of business and let them go out in the country and go to farming and help produce more wealth. We want to get the produce from the farm into the hands of the consumer as soon as we can, in as fresh a condition as we can and at the lowest possible price and still leave us a profit. We are not interested in the middlemen. There are honest middlemen; I have some good friends who are middlemen—but we want to get closer to the consumer. As producers, it is important for us to get closer and we will accomplish that in the future.

There is one other factor we must reckon on, and that is the country church. The country church is becoming more interested in us farmers than ever before. I don't know whether it is because they think we are bigger sinners and need the Gospel more than any other class, but I know that ministers are more interested in country churches than ever before and it is good to see that; it means a better moral tone, better spiritual tone in every rural community. The church movement has not accomplished very much yet, but it will. We need them, we need churches that are taking a more active interest, perhaps, in our business, not in the business of farming in a material sense, but in the community, from a social standpoint as well as a religious standpoint.

Now we have completed our taking of the inventory. We might add other factors that are at work. You see how many factors are at work to help the farmer, tonight. As I was running over these various factors, this story came to my mind. A little fellow was down in a ditch that ran out from a saw mill and he had a force-pump, and pretty soon he saw a farmer coming down the path alongside of the ditch and put on a bright smile, and got his hose down in the ditch all ready for action. The farmer was walking along steadily and wasn't paying any attention to the boy, but the moment that farmer got to the boy, the boy began operations, and when the farmer walked along, he kept following and pumping all the time. Presently the farmer became angry and reached down to the mud on the road and began to fling mud at the boy in the ditch, but that didn't bother him: he was pumping just the same and having his sport. After the farmer passed, I said to the boy, "Why did you do that?" "Oh, I just wanted to see that farmer step a little livelier, that's all," he replied. Now, I sometimes think that's the way with some of the forces at work—they want to see the farmer step a little livelier. We are accomplishing—we are applying the science of farming to various lines.

Now I would like to discuss a few fundamental questions in relation to this progress proposition. In the first place, I believe we are right in standing on the platform that whatever is accomplished for the agriculture of Pennsylvania, must be accomplished through the force of education. Herbert Spencer said years ago that education is preparation or complete living. Agricultural education, therefore, is preparation for complete living on the farm. Now that is what we want to accomplish. It doesn't matter where you live in Pennsylvania, if you have a boy or a girl that is going to farm, your desire should be to educate that boy or girl so that they can

take up the business of farming and live on the farm in such a way that they will accomplish the most good, the most out of that kind of life.

Now there is the aim, whatever the methods might be to accomplish that, it will take all of our agricultural forces to accomplish that work. In other words, the school idea must be paramount in every community, and I am going to make the statement here tonight that no school in any community can rise higher than the ideals held by the people of that community. If you are satisfied in your community to have an inefficient school and an inefficient teacher, you won't have very much better. The State may be able to help you some, in all probability it will, but as long as the ideals of the people making up that community are not up to the standard, the educational work of that community will not be up to the standard; so let us have higher educational standards in Pennsylvania with reference to our schools.

There is one other thought I want to express in this movement for agricultural progress in Pennsylvania. It seems to me if there is one thing lacking, perhaps, more than anything else, with our Pennsylvania boys and girls, and I speak as one of them, it is the fact that the average boy and the average girl brought up on the farms of Pennsylvania do not appreciate or realize that country life has a poetical side. In other words, these boys and girls, too many of them, do not see the beauty in sunrises, the beauty in birds, the beauty in flowers, the music in the rustling of the leaves on the trees that may be near the house. They don't hear the sound of the birds; they don't hear the music in the hum of the bumble bee. In other words, they miss the poetical side of country life. Now I want to say, as one who has had experience in farming, there isn't a great fortune in farming. A man ought to be able to make a good living, educate his children well and have a comfortable home, and beyond that, what more do you want? But we want more farmers in Pennsylvania who will appreciate the poetical side of rural life, and that is something that must be cared for in the home and in the boy and girl.

Another very great need, perhaps I might say the greatest need, and after all, in Pennsylvania, in order to progress more rapidly and safely, is the question of science. When it comes to the application of principals; all progress is based upon truth, upon science and reason. Why a great many farmers fail is because they are not applying the right sort of science; they don't know the truth in the first place, and if they know the truth, perhaps they are not applying the principles necessary in order to find out, so that after all we must know the truth about the various farm operations in order to expect success. In other words, we must encourage research work in order that we may learn the great truths that are needed in this business of farming.

One other thought I want to drop before showing the views, is this; I believe there are many farmers in the State who know a great deal better than I do that they ought to use lime, but they do not use lime; who know that they ought to use a certain brand of fertilizer, but don't use that information that they must have, and they do not call upon the various agencies in the State for the information that is available to help them in their farming. You have all heard that old story about the girl in one of the eastern colleges and her parents visited her and found her with a pair of boxing

gloves on, boxing with another girl. They were indignant and they said to her: "We didn't send you down here to learn how to box; we sent you to get an education, to study literature, music and subjects of that kind that will be of more or less value, but boxing won't be worth anything to you." But the girl went ahead and kept up her boxing. A few years after that, she found a position as a teacher in a backwoods district. There were some large boys in the school, and one day one of the smaller boys become unruly and the teacher informed the boy that he would remain after school for punishment and the larger brother also remained, and about the time she began to use the rod, the larger brother stepped up and made a pass or two at her then she began to apply the knowledge she had obtained in college in boxing. We say sometimes that knowledge is power, but it is not unless it is applied. This teacher applied the knowledge and got results. The same is true in farming—unless we apply the knowledge or science we possess in regard to farming, we don't get results. That is one of the greatest things in Pennsylvania today.

PENNSYLVANIA STATE COLLEGE

In speaking of the work of the Pennsylvania State College, we might divide it into three general classes: First, the research side of the institution. We have the Experiment Station with a force of men devoting all their time to research work; in other words, they are endeavoring to ascertain the truth regarding important topics to the farmers of Pennsylvania. Then we have the instructional side of our institution. Large numbers of Pennsylvania boys are going there for instruction in agriculture. I want to say that we are having quite a large number of boys, also, from other states, that are coming to State College, because they feel that they can get there what they want. We have boys from New Jersey, New York, Maryland and other states, that are there for agricultural training. Then we have the extension side of our college proposition. After we have conducted these experiments with fertilizers or stock breeding or whatever it may be, we want to convey these results to the farmers of the States, so that brings up the third general line of extension work which is important in our college organization. Now, with these three lines in mind, we will have the views and pass them through rapidly to our work at the College.

At the Pennsylvania State College, we have five schools. One of these schools, or general divisions of the College, is that of agriculture, the School of Agriculture and Experiment Station. Then we have in the school organization, eleven different departments taking up the various phases of our agricultural work, such as botany, agricultural chemistry, agronomy, agricultural husbandry, dairy husbandry, experimental agricultural chemistry, and each of these departments has a head and then there are instructors or assistants working under the various heads.

We shall first take up tonight the work of the Department of Agricultural Education, the work which this Department is endeavoring to do, or the public school work of Pennsylvania. We feel that this work is important and should be fostered by the College. In order to accomplish more along the line of agricultural education for the secondary schools of the State, and all the public schools, in fact, we have established a summer session and in this summer session the

teachers are taught agriculture, and the science relating to agriculture and school gardeners' work is an important feature of the work. We have here a picture showing students at work, students from the public schools at work making gardens, and at the College, during the coming year it will interest you to know, that we will take students, boys and girls, out of the fifth and sixth grades and bring them up to the College farm and assign them definite plots for garden work and this work will be conducted under the management of the instructor in charge of the course. A teacher, in accomplishing work of this kind, should improvise as much of the apparatus as possible, because, ordinarily, funds are short for this sort of work, and he should do it also for the purpose of showing the children that they themselves can make these devices that are in use on the farm.

Here we have a seed setting device, a home-made affair. This was a cigar box in which you see a collection of insects. Boys and girls should learn to recognize early in life the various insect enemies of the farmer and training of this sort will be very useful from the standpoint of instruction. It is important for the students to learn to know the life history of the various insects. Here is a flowerpot with an ordinary lamp chimney used as a breeding device, where the insects can feed and where various stages of their development can be observed. That appeals to children and it is interesting to them. A careful study should be made of the soils of the various parts of the State. Here we have a piece of apparatus made of a tray and box and lamp chimneys, which serves the purpose very well. Studies of the various kinds of soil may be conducted with this device. You can also fix up bottles in this form to make experiments on the capillary movement of water, clay and sand. Various clays and silts are placed in this bottle. This is a protograph of the same exhibit that you will see in the Horticultural shows here at Harrisburg.

I want to call particular attention to Dr. J. P. Stewart's work with the apples. A very large number of Pennsylvania farmers are interested in the growing of apples and will be interested to know that Dr. Stewart has about five times as many trees used in his experiments as are now being used in this work by all the other agricultural colleges in the United States combined. We do not say this at all in a boasting way, but to bring to your attention the magnitude of the research work that is being conducted by the State College. One other thing I want to say is this: We are not able to draw general conclusions that will be of value for all the various soils of the State. While we are harvesting not less than 8,000 bushels of apples, these experiments are being conducted in different soil types, so the results in one place may not be of very great value to fruit growers who are operating in different soil types. You can see the importance of conducting these experiments on types of soil which are best adapted to fruit industry. These experiments will show some important results. On the left is shown a fertilized tree that has a balanced ration, and it is loaded with fruit, while on the right no fertilizer was employed and those trees look simply like shade trees and there is very little fruit on them. That experiment was made in Bedford county, where we are getting striking results from the use of commercial fertilizers. We have here a fertilized tree that produced 1,300 pounds of apples, and on the same soil, under the same conditions, the tree next to it produced only 400

pounds. There is a gain of from 250 to 400 bushels to the acre, due to the proper use of fertilizer. This is a general view of one of the experiments in Bedford county. The next will show us an orchard scene, the Bedford county orchard where immense quantities of fruit are being harvested and where we have secured such splendid results from the use of fertilizers. In connection with the apple experiment, the Department of Experimental Pomology is also conducting experiments with spraying material. The fruit growers are particularly anxious to have summer sprays for peaches that will not injure the foliage or fruit. Dr. Stewart is giving very careful study to this subject and here we have sprayed trees on the left and unsprayed trees on the right.

Taking up the work in the Dairy Department, this is a photograph of the first class in dairy husbandry or in dairy manufacturing at State College, and the gentlemen on your left is Mr. Gurley, who was the first professor of dairy husbandry. Tremendous progress has been made since that time. Here is another view, an old dairy building. Later we got the new one, which is modern in comparison, with modern equipment, a building in which is given instruction to four or five hundred students in dairy husbandry during the year. We are conducting here a commercial creamery. Two hundred and twenty-five farmers around about State College bring their milk and cream to this building, and it is made into butter and cheese and ice cream and various dairy products. This supply is used for research work and is also necessary in our instruction work, to teach the students how to produce dairy products.

A very important line of work at the College and the School of Agriculture is stock judging. It has very much the same effect as the club work referred to awhile ago. We want our boys to know a good animal and a poor animal, so that the judging of dairy and meat cattle is carried on to good effect. You see here a class of students judging in the winter time. These students are judging horses, which is very interesting and stimulating. We find that when these practical methods are used, the boys take a keener interest in their work and get more out of it. It is always better to study the subject itself than to study about it in text-books. Here we have a carload of horses purchased for feeding experiments. You will be interested to know that part of them were fed ensilage and we have reason to believe that will make a good feed for horses. Here we have a class doing some judging work, again. These students are judging some swine and this is carried on just as carefully as it is with the larger animals and we regard it as just as important. Those three swine, Berkshire barrows, were bred and raised at the College and exhibited at the International Stock Show and were among the prize winning ten at the Show. That shows a type of house being used on one of our farms for the housing of swine. The house seems to be very satisfactory, is well ventilated, and seems to meet our needs very well, and is inexpensive to construct. We will be glad to give plans for these houses to anyone desiring them for the purpose of construction. Here we have some Shropshire lambs exhibited at the fairs last fall and now being used at the College for instruction work. That is a type of lawn mower, used on the campus at State College, a lawn mower that is very effective and not wasteful. These sheep were not allowed to graze on the entire campus, but on a part of the campus, and I think we are agreed as

farmers that this kind of lawn mower should be used more generally throughout the State. We have thousands and thousands of acres of waste land in Pennsylvania that should be utilized in producing wool and mutton and it is too bad that the dog nuisance of Pennsylvania prevents greater progress in the sheep industry.

Experiments are being made at the College with cows as well as with beef cattle, more particularly beef cattle in the open shed. These animals are being fattened and seem to thrive better in the open shed than in the warm barn. It is interesting, because it is a means of reducing the cost of feeding and getting better results; that is, the feed consumption seems to be more beneficial than in the case of those animals kept in a closed barn. This is open on three sides. I must confess when I was looking over these appliances and came to the history of this Hereford steer, that I found my enthusiasm going up something like it used to in the old days when I was growing cabbage or the market. Here is the history of that steer. It is two years old and when put on the market it weighed 1620 pounds and brought 12 cents a pound. The price, therefore, received or paid for that steer, was \$196. How is that? I think I'm right in that arithmetic; if not, you can multiply 1620 by 12 and you will get the result. In other words, nearly \$200 for that steer only two years old. That shows possibilities in Pennsylvania with our large areas of good grazing land. With the possibilities we have in this State to grow corn, why not produce steers of this type for markets that are paying such liberal prices today? We also have a herd of Aberdeen-Angus, and this is a bull of that herd. In this connection, it seems to me that Pennsylvania should give encouragement, or rather, the farmers of the State should get together and form co-operative breeding associations, so that two or three might go together and get animals of that type, and certainly that would mean very great improvement of our livestock. Here is the herd of Aberdeen-Angus feeding over the College farm. They receive nothing but blue grass during the summer and in the winter, ensilage. This experiment is made to determine the cost of breeding cows.

Now I want to show you a few views, illustrating the Department of Agronomy. These students are studying soils and their adaptation to different crops. Every student must take this fundamental work. That is a general view of the experimental crops at State College, which attract attention, you might say, throughout all the civilized countries of the world. In importance, this experiment is placed next to the experiment at Rottingstead, England, by many soil specialists. There are 144 plots, 1-8 of an acre to the plot, represented in this experiment. It is the longest continuous experiment with fertilizers in the United States. It has been in progress thirty-one years and we have gotten some very positive results which may be had in the reports of the Experiment Station. A four-year rotation is started with corn, followed the second year by wheat, the third year by oats and the fourth year by hay. On the extreme left there are five shocks; you cannot see all of them, but there are five shocks of wheat in that plot. That plot received six tons of manure and two tons of lime during the four years. The next plot received lime only, while the plot on the right received nothing—hasn't received any treatment of any kind for thirty years. You will notice that production decreases as you go toward the plot that received nothing. There you see the results on the same plots when it came to hay, the

hay being clover and timothy, but without any additional fertilizer, but the residue from the wheat or that showed up in the hay. On the left you see the large piles where manure and lime were used, and on the middle plot you see the piles where lime only was used; the plots on the left are only a little larger. These piles show where the farmer makes a mistake when he attempts to use too much lime. This is another view of our fertilizer work and you see some of the plots in the distance, behind.

One of the crops we are endeavoring to encourage the culture of in Pennsylvania is alfalfa. This is a crop of alfalfa that is being harvested in rainy weather. By placing these canvas covers on the shocks, we are able to protect them from rain and make a better quality of hay. The work in alfalfa is conducted on a large scale; we have at present about thirty-five acres of alfalfa, and the cultivation of this crop, which is so important for agriculture, and its needs in every particular, are being studied with a view of showing the farmers the appropriate methods to use in growing it. Here is another field of alfalfa, the second cutting. This is a photograph of the Spaulding deep tillage machine. How many times have we heard discussed the question, "Does it pay to plough ten inches deep or is five or six sufficient?" This machine is ploughing this field to the depth of twelve inches and we have been conducting experiments for three years in ploughing, comparing ploughing only five inches deep with ploughing 12 inches deep, and the results from three-year test are all in favor of the deeper ploughing. Of course, this experiment should be conducted longer in order to be certain as to the value of the deep ploughing. This is a photograph of our variety test plot of oats and wheat. These experiments have been in progress at the College for many years and the results are published in bulletin form.

This is a variety test plot for testing potatoes. Although the limestone soil of the College is not very well adapted to potatoes, yet we have gotten some very interesting results which are shown in bulletin form. We also have an experimental grass plot, where clover and broom grass and blue grass and timothy and different kinds are studied and their individual characteristics noted. The next picture shows a study of timothy. These plants were started at the same time and grew exactly under the same conditions. The plant on the left is large and productive, while that on the right is smaller and less productive; this indicates the possibility of developing special strains or varieties of timothy. We speak of distinct varieties of corn and potatoes, and it has been shown by our experiments and those elsewhere that diistrict varieties of timothy and other grasses may be developed just as well, and that is of great commercial importance to Pennsylvania.

We will now say a few words relative to the forestry work of the College. There is a tract of land in Union county where our students go right into the woods and study the details of forestry conditions as they find them. Here are the tents and some of the trees. Here are the students in their practical work. There are thousands and thousands of acres of land just as this all over the State, land that should be replanted with timber-producing trees and fruit trees. It should be utilized to the very best advantage and this is one of the problems receiving attention from the Pennsylvania Forest Department. Here we see the boys at their mid-day lunch. The

small tree shown in the front of the screen is the magnolia, while the palm is on your left. This young tree sometimes will take the place of the larger tree and the smaller growth in the forests should be protected. All these points are brought out in various courses. The boys not only study the growth of forest trees, but the operating problems. Here they are at a logging camp, studying the operations at a skidway. Here they are studying the loading of logs on the trucks and the net view shows the American log loader putting the logs on the trucks before going to the mill, and this view shows a steam skidder that is used in some parts of the State. That shows another line of work taken up by the forestry students, the estimating of timber, which is a part of the course. That shows the home of a ranger in the western country and a good many of our students go west after completing their courses and take up the work in the great forests of the Far West, establishing forests on land that needs attention. We want the same kind of work accomplished in this State. Here the students are studying the stumps of trees, to determine their past history, to know how many years will be required to produce the same kind of tree.

Leaving the Forestry Department, we will show a few slides illustrating a work that has attracted attention in foreign countries, in reference to the work of the Department of Animal Nutrition, in the care of Dr. Armsby. This shows a steer in an air-tight chamber. It is constructed in such a manner as to be absolutely air-tight and everything that the steer or animal consumes is measured, and samples are taken, and all the waste products are analyzed and the quantities determined, so that Dr. Armsby and his assistants know exactly what the steer has utilized and what waste products are. It is too soon to get practical lessons from this work, but the point we want to bring out is that in this study they are determining underlying principles relative to the feeding of farm animals, and this work is of great importance. Here we have another view, showing the apparatus, much of which is very delicate and complicated. That chart shows the energy expended by the steer when he is standing or when he is down in the straw. The arrows which you will see here and there over the chart show the additional energy expended by the steer when he gets up in the stall, showing that he is consuming more food, utilizing more energy in that operation, than when he is quiet. That is the pump in the calorimeter that draws the water through the calorimeter and automatically takes some, so that we can determine just what the results are.

That is the last view, which we will show and illustrates the work, the growth or the increased enrollment in the School of Agriculture. I don't know whether you can see figures on the left or not—I don't think many of you can, so I will read them for the purpose of indicating the tremendous growth we have had in the School of Agriculture, so far as the enrollment of students is concerned. You will notice at the top, just 9 years ago, we had 32 students enrolled; 8 years ago, we had 94; 7 years ago, we had 111; 6 years ago, we had 210; the next year, 337; the next year, 479; the next year, 638; the following year, 824 and this year we have—the latter part is estimated—we have an exact enrollment in the school now of 961 or 962 students.

Now, I don't believe there is another agricultural college in the country that has made that record, the tremendous development of

instruction work and increase in students of agriculture. Here is the situation; that if the school continues to develop or to receive students as it has done in the past, in four or five years from now the enrollment will be double what it is today, provided proper equipment is furnished for this work. The students are coming to us from all over the State, because they want to know how to farm; that is the primary reason; they want to study practical agriculture. Sometimes the question is raised whether the college does not educate the boy away from the farm. I want to say that certainly is not the case with the Pennsylvania State College, because practically all our boys want to return to the farm. Some of them cannot, because they do not have the money to buy or equip a farm, but the desire is there, in nearly all of them, to return to the farm. The work is both practical and technical. We are preparing men for the service of the Department of Agriculture at Washington, the Department of Soil Survey, and various lines of work, as well as various kinds of work in different parts of the country. I thank you for your attention.

The CHAIRMAN: The next item on the program is "The Agricultural High School as a Means of Increasing the Producers' Efficiency," by Dr. Charles E. North, of New York. I now have the pleasure of introducing Dr. North.

Dr. North spoke as follows:

THE AGRICULTURAL HIGH SCHOOL AS A MEANS OF INCREASING PRODUCERS' EFFICIENCY

By DR. CHARLES E. NORTH, *New York.*

Ladies and Gentlemen: I frequently speak to dairymen and to milk dealers and to doctors, but I think this is the first time I have ever had an opportunity to talk before agriculturists, and my reason for venturing to do so is because I have been lately impressed with the fact that the men who conduct our agriculture are shipping every year to our cities their most valuable crop and a crop which they can ill afford to send there. I have become satisfied that the boys and girls who are bred and born on our farms are being contributed every year to our cities, and our rural communities are being deprived of the advantages of the best blood of the land, because the farmer, in addition to supplying the city with food and with clothing, is also supplying our cities with men and women.

In New England, on a recent visit, I inquired as to the quantity of milk produced by New England dairy farmers, and I was amazed to discover that there are 6,000 farmers shipping milk to the city of Boston, which takes 240,000 quarts of milk daily, which means an average of production of 40 quarts to the farm, and these men receive an average of four cents a quart the year round for their milk. In New York State, I have discovered that the average production of milk is about 100 quarts to the dairy farm and the farmers receive three and one-half cents per quart the year round. I don't know about Pennsylvania. In Ohio, for some of the larger cities, like Columbus and the city of Cleveland, the farmers around them

are producing something over 100 quarts each and receive about three and one-fourth cents the year round. This seems to indicate a great difference in the efficiency of the work which is being done on these farms and it seems certain to me that the character of the men who are doing this work has a great deal to do with the character of the results. New England has been shipping boys and girls from the country to the city much longer than other parts of the United States and the rural communities have been deprived, to such an extent, of their population, that the deserted farms of New England are well known. I know that your State is one which in agricultural prosperity is probably exceeded by no other state in the Union, but I feel certain that there is not one who does not realize that a large percentage of the boys and girls, perhaps your own, are looking towards the city as the place to which they desire to go to live and to do their business.

Now I maintain that this is wrong. I maintain that farms and farmers are more necessary than any other portion of the community, that farm life should be made attractive, that farm business should be made profitable, and I want to tell you that in my opinion the chief reason why the boys and girls of rural communities go to the city, is that the character of the education which they receive in rural schools, and particularly in the high schools to which you send them, is an education which gives them a distaste for country life and which fills them with ideas that incline them toward city life. Your high schools, as ordinarily conducted, are stepping-stones to the city for the boys and girls who go there. I have begun this investigation too recently to ascertain what percentage of the boys and girls who go from the farm to the high school, go on to the city or go back to the farm, but I believe that just as soon as such an investigation is made, it will disclose the fact that a remarkably large percentage, by far the larger number of boys and girls who graduate from the high schools to which you send them, go eventually to the city, instead of bringing that education back home.

The way to keep the boys and girls in the country, in my opinion, is to change their form of education. The previous speaker has just told you that, at the College this year, your State College, there are 900 students, and assuming, for the sake of argument, that each class in the four years' course there, is the same size, you would then have in our State Agricultural College 3,600 students; but there are, I understand, over 90,000 farms in the State of Pennsylvania, and if you allow one and one-half boys to each farm, or have as many as 150,000 boys on your farms, you have only 3,600 of them in your State College, which means something less than two per cent. What about the other ninety-eight per cent. who don't go to your Agricultural College? A large percentage of them are due to leave the farm and go to the city.

Now, in my opinion, the remedy for all of this lies in making your school education an agricultural type; so that the boys and girls who go to your ordinary common schools and learn how to do and how to enjoy and how to like the things which you like, how to do the work which their fathers and mothers did, but to do it better and to live better—now, I have had the good fortune recently to make a visit to a school which is operated on exactly this principal, a high school in which agriculture is not incidental, but in which it is the main thing, in which the teaching of those courses to the boys and

girls is not a short course for a month or two or three months, but in which it is the main thing.

Without further introduction, I will show you some pictures of the Sparks School in Maryland, eighteen miles from Baltimore, where an ordinary country high school is operated for the purpose of keeping the boys and girls at home. Here you see the high school located right out in the center of the country district. (Referring to the slides) I want to tell you that the peculiarity of this high school is that it is a public school, not supported by philanthropy or endowment, but the farmers decided that they wanted their high school an agricultural high school and this is the result of combining four district schools into one, and it cost \$20,000. It don't cost any more than the ordinary school system and the farmers formed a regular school committee of that county and the school is operated as any high school would be operated at public expense. The building has been built since 1909 and is on a plot of about seven acres of ground. Here is one of the boys on his way to school, showing the character of the country in which the school is located. This is a near view of the school building. The children of these four district schools lived at distances, which made it necessary to send for them, so these large wagons go out every morning and bring the boys and girls to school. Here you see the wagon unloading. The boys have a manual training room, in which they learn carpentry, learn the principles of erecting buildings and a large part of the furniture used in the school has been built by the boys. Here we see them in the soil laboratory where they test soils according to principles which are well known. Here is another portion of the same laboratory. Here is an experiment by the use of pots, testing the value of different kinds of soil with the same seed. Here you see the small and large boys; everybody that comes to the school gets the same kind of drill,—hard work on the school grounds. Here is a drainage experiment, in which a swamp which was near the school grounds has been transformed into a productive field by drainage put there by the boys themselves. This is a corn experiment, the corn being planted by the boys. This is another picture of the same thing. You see a small boy there admiring some of the extra tall corn and one of the amusing things about the work there is that many of these experiments are conducted on the home farms of the children themselves. Some of these small boys enter competition with their fathers and show them how to grow corn and in many instances surprise their fathers. This is another picture of the same sort.

Here we have an illustration of a corn contest or competition. They have a corn club there among all of the boys and have an annual competition in corn, illustrated on this table by various specimens of corn brought by the boys in this competition. Now here we have a horse judging contest. The boys are taught to judge the horses and they judge some of the horses which these farmers have. This is a closer view of the same thing. This is another portion of the horse judging contest. The boys are also instructed in the judging of dairy cattle and some of them have dairy cattle on their own farms. Instructions are also given in spraying orchards and the farmers in the neighborhood have taken a great deal of interest in

this matter and have allowed the boys to come around to their farms and carry out spraying operations on their orchards. Here is another picture of the school brigade on one of its spraying expeditions.

They also have a course in forestry, so that the boys are given elementary instruction in the matter of the care of trees, and here you see an expedition starting out with axes over their shoulders on one of their forestry instruction courses, and they have installed a camp for the forestry class. Here you see the boys in the camp. At the head of the table is the principal of the school. Here is another group of the forestry class. On the left you see the school principal, a graduate of one of our agricultural colleges, and it is due to his energy and enterprise and the work he is carrying on there, that this school has developed as it has done. He has done a great deal of work in establishing that school, and it is due entirely to his kindness that I have secured these slides. This is a picture of the forestry class cooking a camp dinner. Here are the boys around the camp fire on one of their camping expeditions with the forestry course. This shows dinner time in the forestry camp. I show you these pictures to show you the way their interest can be aroused by outdoor teaching and practical teaching.

Now the girls in the school are given courses that you will not find in the ordinary high school. This is the class in domestic science, in which these girls are being taught the principles of house-keeping, cooking, etc. Here is the kitchen of the domestic science class. The day I was there I saw a sight somewhat like this, in which the girls were being taught the fundamentals of making bread. The girls get the lunch for the scholars, the school being distant from their homes. These students all have to have lunch in the high school and the cooking class of the girls gets a hot lunch for the students and here you see them lined up and going past the place where the lunch is handed out by the girls. The girls are also given some elementary instructions in agriculture, so that they take at least one year of agricultural work and instruction. We have here the class in weaving and in basket making. The girls are taught some of these things because it interests them and because it is an addition to their home life. This is the class in basket weaving. The children, including the little girls, are also taught gardening. The theory is that the girls in the country should know the principles of the kitchen garden. The men are away in the field and don't have the opportunity to take care of the little vegetable garden close to the house, and the raising of vegetables is something that every farmer's wife should know. Here we have the girls working out in the little gardens adjoining the school. Here is a picture of boys and girls engaged in planting. The class all does the same thing at the same time. Here is a picture of some of the children harvesting some of the vegetables they planted. The girls are also instructed in the care of poultry, the theory being that is more of a woman's work than a man's to take care of chickens, so the girls are the ones who receive the chief instruction in the raising of poultry in this school. The teachers in this school believe that it is an important matter to take an interest in the recreation of the students; consequently, they are present and encourage outdoor recreation among the boys and girls, so that they enter into the social as well as the intellectual life of their students.

Here you see a horseback brigade, the boys and girls out on a horseback ride. Here is a snowball fight in which the principal acts as umpire. He says that he found it necessary for him to take part, for the reason that if he didn't, they took place anyway and accidents would happen, so snowball fights are now conducted under regular rules. Here is a picture of a watermelon picnic, which is conducted by the small boys with melons which they raise themselves. Here is the old swimming hole back of the school, in which the boys are actually taught to swim as part of the business. Here are the students looking on at a baseball game, the high school team baseball nine. They also have theatricals in which the girls make the costumes and the boys, with their carpenter tools, build the scenery. This is a closer view of some of the costumes which the girls manufactured. They have also entered into the organization of clubs among the boys and girls and among their fathers and mothers, so they are doing a great social work with the families from which these children come, and one of the things they hold regularly is a corn congress, and here you see one of the boys putting up a sign advertising the corn congress which is going to be held at the school. Here is a picture of one of the meetings of the corn congress and one of the boys is speaking on the subject. This is a meeting to which a large number of the parents of the students have come. One is held every month and the fathers and mothers of the students come to the school in order to receive instruction and hear interesting lectures.

Here the mothers of the students have come to listen to the lectures. On Saturday afternoon, once a month, a club composed of the mothers of the students comes regularly to the school during the year. Here we see the mothers of these girls, the mothers of the boys and girls being instructed in cooking. The school is operated on the theory that it should not be only for the benefit of the young, but that it should be a social center of the community, and here we see the results of that work—the mothers of some of these boys and girls want to learn some of the things their daughters have learned, so they come and receive actual instruction in some of the fine points of cooking. This is an indication, also, that some of the mothers of these girls want to learn something about the use of carpenter's tools, and they go into the manual training room of the school and are taught some of the elements of carpentry work; in fact, this mothers' club, which is composed of eighty-five members, is divided into four classes, the cooking class, carpentry class, basket weaving class and the literary class, so there are eighty-five registered members in this mothers' and sisters' class.

Here you see a gathering of one of these large outdoor meetings of the fathers and mothers of these children. The boys of the school built an outdoor amphitheatre capable of seating 1,500 persons. I am informed that the cost of that theatre was only \$75. The boys, of course, supplied the labor, and this gives a slight idea of the seating capacity of that outdoor amphitheatre and the character of the audience. There's a picture of the seats that the boys built. Here is a picture of the platform where the graduating exercises took place. Here is another portion of the platform on one of the days when they were holding exercises there. This is a picture of graduation day, in which you see the girl students and the audience, with their fathers and mothers waiting to listen to the graduating exercises.

This is the last picture I have to show you and I know you don't want me to supplement these pictures by any long remarks, but I just want to say to you that I am satisfied in my own mind that the efficiency of our agricultural processes and of our dairy processes can be enormously increased if the education which is now carried on in your own communities is transformed, so that instead of being an education which leads your boys and girls away from the farm, it will be an education which satisfies them with rural life, which teaches them how to conduct their business, so that they understand not only the scientific principles of the business, but also understand business methods, and I just want to leave this one thought in your mind. While the business man finds that the very first thing that is required of him, in order to make a success of his city life, is a knowledge of accounting, it is a rare thing, in my experience, to find an agriculturist or farmer who has any idea of how to keep his books, how to keep his accounts, so that he knows what his profit and loss is, and the emphasis which is laid in this high school that I have just shown you, on the boys, is that the knowledge of books, the knowledge of farm management, the knowledge of the cost of every one of the farm operations and the profit and loss, is the most important part of the education, so that the graduating essay of each of the boys graduating from the little high school must consist of a financial statement of the profit and loss on each one of their home farms. I looked at two of the leading essays when I was there, in which I saw a map of the acres and of the fields and fences on each one of their home farms, and a financial statement of just what it had cost in each one of the crops and on each one of the fields, to conduct those operations for one year, so that these boys, as they grow up and go to work, would know whether they were gaining or losing.

This afternoon I asked whether someone could tell me what it cost the farmers of Pennsylvania to produce a quart of milk and I was told that there was not a man in the State that could tell me what it cost the farmers of Pennsylvania to produce a quart of milk. In other words, the methods of keeping farm accounts are such that the average farmer does not himself know what his costs are. Now, they never will know these things until it becomes a part of their constitution, a part of their knowledge, a part of their sons' knowledge, how to keep these accounts and estimate profit and loss, and when that is done through education, we will have efficiency, we will have a degree of efficiency that will mean prosperity and will mean that we will be happy in this rural life, and not only benefit us, but reduce the high cost of living that we hear so much complaint about on the part of our city brothers. I thank you for your attention.

The CHAIRMAN: We have now gone through with the program for the evening. Is there anyone who has any remarks to make? I am sure that we are very fortunate in having got so many agricultural gatherings in this city at the same time. We have, during the day, just about as much variety in the discussion of farm topics as has been presented here in the discussion of farm operations, and the illustrations at which we have been looking this evening. Tomorrow, four Associations will be in session. The State Board of Agriculture will be in session in the forenoon and afternoon at the Chestnut Street Theatre Hall on Chestnut Street; the State Livestock Breeders' Association will be in session in the forenoon and afternoon in

the Chestnut Street Auditorium, in the same building; the State Horticultural Association will be in session in the forenoon and afternoon in this hall, and the State Dairy Union will be in session in the forenoon and afternoon in the small room on the first floor of this building. Tomorrow evening there will be another joint session of all these associations, and we have the assurance that the Governor will meet with us and will preside at the meeting. I hope that the Auditorium over on Chestnut Street will be crowded to overflowing. If there is nothing further to come before the meeting, we will now stand adjourned.

Wednesday Morning, January 22, 1913.

The State Board of Agriculture was called to order at 9 A. M., by Vice-President John H. Schultz, acting Chairman.

MR. HUTCHISON: Friends, I would like to have your attention a few minutes this morning. Brother Creasy is attending a meeting of the Horticultural Society, and he is somewhat worried over a statement that appeared yesterday in, I think, two of the Philadelphia papers, misquoting him in regard to a statement that went out from a meeting held here on Monday, in regard to the Department of Agriculture. He says he gave no one authority to send out the statement that he was antagonistic to the Department of Agriculture, and if he was here this morning, he would state to you that the most friendly relations exist between the State Grange and the Department of Agriculture. At the meeting in Clearfield, in his annual report, he commenced the work of the Department of Agriculture, and yesterday in his address at the Horticultural meeting, he spoke in the most commendatory terms of the work of the Department, and he wishes this morning that the brethren, who are his friends and co-workers with him, should understand that he has nothing antagonistic to any society that is working for the benefit of the farmer. For the Board of Agriculture and all these kindred organizations he has the most friendly feeling, and he asked me to make this statement this morning. He couldn't be over here, and I know that his treatment of us has been most cordial. We have never called upon the State Grange to help us in any measure that was before the Legislature, individually or as a committee of this Board, but what they have given us the best support they could, and the friendliest relations exist between the Secretary and Mr. Creasy and all connected with the order.

A Member: I want to endorse the statement just made by the speaker. I am in close touch with Brother Creasy, being a member of the Pennsylvania State Grange Finance Committee, and also a member of the Pennsylvania State Legislative Committee, and I know for myself that Worthy Master Creasy stands back of the agricultural interests of this State. I know that he urges, in our work, the support of those institutions, and I don't see how a statement of that kind could occur. It is either done through some misunderstanding or with some intention to injure the State Grange, and I know that

Brother Creasy is on the other side—he is with the agricultural interests and especially with the Pennsylvania Agricultural Association.

The SECRETARY: Since this matter has come up, I want to say in behalf of the Department of Agriculture, that when my attention was first called to the article that was in the papers which has been referred to, I felt sure there was a mistake somewhere, and paid no attention to it, because I know that the most friendly relations possible exist between the Department of Agriculture and the Pennsylvania State Grange. In fact the farmers of the State of Pennsylvania are indebted to the State Grange for the establishment of the Department of Agriculture. They saw the importance of having a medium through which they could reach the Chief Executive of the Commonwealth and, therefore, they wanted a Department, the chief of which would be a member of the Governor's Cabinet, and the most friendly relations have always existed, and I have no doubt will continue to exist.

The CHAIRMAN: Brother Seamans was instructed yesterday to appoint an obituary committee. I believe he is ready to report.

MR. SEAMANS: Owing to illness, I was not able to attend the session last evening. I announced that I would appoint this committee at that meeting, but as I was unable to attend, I will appoint it now: Chairman, Matthew Rodgers, of Juniata; P. S. Fenstermaker, of Lehigh, and R. J. Weld, of Warren.

The CHAIRMAN: Before we proceed with our regular program, I believe Brother Blyholder has a report to make.

MR. BLYHOLDER: The report I have is the report called for yesterday afternoon just before adjournment. Another member of the committee had the report and I was unable to make it at that time.

Mr. Blyholder then read the report as follows:

REPORT OF COMMITTEE APPOINTED TO CONFER WITH THE SECRETARY OF AGRICULTURE.

The Committee appointed to consider, in connection with the Secretary, the question as to whether the Board has power to unseat a member who fails to attend its meetings or take part in its work, begs leave to report as follows:

Your Committee and the Secretary of Agriculture had an informal conference with Deputy Attorney General Hargest in relation to the subject under consideration, and after such conference, your Committee, together with the Secretary, are of the opinion that no person has authority to suspend a member of the Board, except the Associa-

tion by whom such a member was elected, and we do not see that the Board can take any action other than to report delinquent members to the Association by whom they have been elected to membership.

S. S. BLYHOLDER,
MATTHEW RODGERS,
P. S. FENSTERMAKER,
Committee.

MR. HUTCHISON: I move that the report be accepted.

Motion seconded.

The SECRETARY: Does that include the adoption of the report? If it is adopted, it becomes a rule of action for the Board in the future.

MR. HUTCHISON: I meant to move the adoption of the report. I move that it be adopted.

Motion carried.

The CHAIRMAN: We now come to the Report of the Standing Committees. The first is the Committee on Fertilizers, J. Aldus Herr, Chairman.

(Mr. Herr was not present.)

The CHAIRMAN: Mr. Herr does not seem to be here yet, so we will take up the next subject, Wool and Textile Fibers, D. S. Taylor Chairman.

Mr. Taylor then read his report as follows:

REPORT OF COMMITTEE OF WOOL AND TEXTILE FIBERS

By D. S. TAYLOR, *Chairman*

Gentlemen of the State Board of Agriculture: After a period of two years, I am again called on to make a report on Wool and Textile Fibers. I wish to say I have not been able to make such a report as I had wished on this important subject, being unable to obtain the data I wished, therefore my report will be brief.

I have taken twenty counties in Pennsylvania showing the number and the value of the sheep in each county, the number of fleeces of wool and mohair.

The twenty counties named, being all of the counties in Pennsylvania in which the value of the sheep in each county exceeds fifty thousand dollars.

County.	Number of sheep.	Value of sheep.	Number of fleeces. Wool.	Number of fleeces. Mohair.	Value of fleeces.
Washington, -----	196,003	\$845,827	172,416	20	\$388,247
Greene, -----	158,275	710,853	135,701	37	291,468
Mercer, -----	37,705	167,207	26,720	43	52,541
Crawford, -----	29,818	137,512	16,358	18	29,315
Tioga, -----	27,880	132,633	18,169	46	32,488
Bedford, -----	22,112	82,083	11,996	21	17,045
Butler, -----	21,123	85,552	13,341	64	23,105
Franklin, -----	21,007	137,512	16,352	18	29,315
Beaver, -----	18,930	82,920	15,231	7	34,045
Bradford, -----	19,781	90,166	12,872	14	22,213
Lancaster, -----	18,027	76,312	12,288	27	13,553
Cumberland, -----	16,334	79,497	6,474	1	11,738
Indiana, -----	16,069	65,888	9,783	17	13,170
Westmoreland, -----	14,764	61,922	7,016	23	11,994
Huntingdon, -----	14,505	62,788	7,493	16	11,838
Somerset, -----	14,400	55,142	7,937	34	11,195
Armstrong, -----	13,009	51,013	7,311	39	11,064
Erie, -----	12,798	64,908	7,455	78	13,658
Potter, -----	12,521	57,515	8,055	19	12,888
Center, -----	11,789	53,529	6,711	9	11,254

From the census of 1910, we find sheep and lambs are reported from 25,436 farms, or 11.6 per cent. of all farms reported sheep and lambs, 77.9 per cent. reported spring lambs, the number of the latter 51.9 per cent. of the number of ewes. This comparatively small proportion is doubtless due to the early date of enumeration. Ewes are reported on all but 754 of the farms reporting sheep, and for the farms reporting, the average is over 19 per farm. Those reporting rams and wethers, show an average of about 16 per farm. The average flock in the State, excluding spring lambs, is 25 sheep, while in 1900 it was 22.

The number of sheep sold in Pennsylvania yearly is about 320,541, at an average price of \$4.57 each, or \$1,464,872, and the number slaughtered yearly is about 82,218, at an average price of \$5.49 each, or \$154,917, and the amount from sheep sold and slaughtered amounts to \$1,629,789 yearly. The wool from the slaughtered (if shorn before slaughter) would be worth \$56,436. The number slaughtered is replaced each year by the lambs raised and kept on the farms, thus keeping the number about the same if not more. With the mutton breeds the ewe lambs are generally kept on the farms and the ram lambs sold.

But with all of the number of sheep and the amount of wool grown is on the decrease, especially with the fine wools grown in the western counties of our State. The tendency in the breeding, is toward the mutton or coarse wools; crossing the mutton breeds (the rams) with the merino or fine wools, thus making a much coarser wool.

Will you allow me to quote the income from such cross breeding. As reported by the owner in Washington county: "I have only four fine wool ewes, which dropped seven lambs, part coarse wool: The first of these lambs was dropped January 24, 1912, and the youngest February 18, 1912. Sold the seven lambs June 10, 1912, for \$42.16.

They weighed 496 pounds. The oldest and only single lamb weighed 92 pounds. Sold the wool from the four ewes for \$9.25; total \$51.41; average \$12.85."

But the greatest reason many are going out of the fine wool business in Southwestern Pennsylvania is the loss from damage to the flocks by dogs.

Allow me to quote the condition in Washington county from information obtained through the County Commissioners' office:

"The total amount of the 118 vouchers is \$3,948.70, and despite this large amount, there yet remains to be paid about \$8,000.00 on claims. In addition to the 118 claims paid yesterday, there are 220 recorded in the books of the County Commissioners as well as a large number not yet recorded. The claims are paid in order as they come in and are recorded. The last date on which claims were paid was February 27, 1912, when 87 claims were settled. The large amount yet to be paid and the fact that the dog tax fund is now sadly depleted may lead to the dog tax being doubled next year. The Commissioners are now considering this step. Under the law they may double the present tax which is \$1.00 for males and \$2.00 for females. In case the tax is made \$2.00 and \$4.00 there would be probably enough collected next year to catch up with the claims."

The CHAIRMAN: What is the pleasure of the Board concerning this most excellent report?

It was moved and carried that the report be accepted and placed on file.

The CHAIRMAN: We will next hear the Fertilizer Report, J. Aldus Herr, of Lancaster, Chairman.

Mr. Herr read the report as follows:

REPORT OF COMMITTEE ON FERTILIZERS

By J. ALDUS HERR, *Chairman*

When your Board appointed me Chairman of the Fertilizer Committee, one year ago, I was rather loath to accept for I always believed persons to fill so important a position should be well versed along that line of business. While farming has always been my occupation, my experience has been somewhat limited along the line of commercial fertilizers, as they are most generally known to the farmer and manufacturer. Most persons when speaking about commercial fertilizers, generally recognize none whatever but that brought in fertilizer sacks. This certainly is misleading and of very erroneous conception of fertilizers in general. From statistics gathered, the farmers of Pennsylvania, annually, purchase about eight million dollars worth of fertilizer, quite a large store bill to maintain farm fertility which could be produced for much less cost and be of greater value in the production of farm crops.

There is no question in farm economics so important as that of fertilizers. But most persons in treating the subject, fail to recognize the most important part, or it is classified under another head, as barnyard or stable manure. Right here, I expect to receive some criticism from my brother members and farmers. The basis of farm fertility, outside of sods, is stable manure, pure and simple. How about its production, and relative value compared with the so-called commercial fertilizers? From what sources do we receive our stable manure? How about the farm animals of Pennsylvania? According to the latest statistics, 1911, Pennsylvania has the following number of livestock, not including fowls:

Horses, 500,000; mules, 440,000; cows, 900,000; other cattle, 650,000; sheep, 882,000; swine, 977,000. This large array of livestock is worth approximately one hundred and thirty-two million dollars.

How about the value of the manure produced by these animals? If properly taken care of, the following animals produce in one year, fertility to the following amounts in value: A horse, about \$27.00 worth; a cow, \$37.50; a sheep, \$2.50; and a pig, \$3.25 in one year. The value of the manure from these animals would be about as follows: From horses, three and one half millions; from cows and steers, fifty-seven million two hundred and fifty thousand; from sheep, two million; from swine, three million two hundred and fifty thousand. Amounting to a total of sixty-six million dollars of fertility in one year. And I frankly believe one-half of its fertilizing ingredients are lost for want of better care and a more efficient system of applying the same.

No grower of crops has any business, much less a moral right, to purchase the so-called commercial fertilizers until he has economically saved and applied all the stable manure he has at his command. I can well recollect when not one farmer out of ten, used any commercial fertilizer other than barnyard manure. My schooling began, and I grew up under the condition previous to the general use of purchasing fertilizer ingredients. The former idea was, and I believe, a very good one, for many farmers to follow at the present time, that of feeding farm animals and returning the manure to the soil to maintain soil fertility most economical.

It is true that manure is not always produced without much cost. But the average feeder of livestock exports in general the increase in the value of the stock feed, will pay for the feed and care, leaving the manure for the farm at a nominal cost. This very fact that it is generally considered that the manure costs but little, many persons become careless in the handling and applying of the same, and a very large proportion of the value of the manure is lost before applied on the field.

Here is a very large field for Farmers' Institute speakers to work in. But they, too, should be careful, and not forget that example is much better than precept. The writer for more than twelve years has not had any barnyard manure. After hearing an Institute speaker talk on the subject, "The Farmer's Waste Basket," he was convinced along that line, and has ever since applied all manure to the field as made, and I shall never return to the former practice of handling barnyard manure.

The Chairmen of the Fertilizer Committee have generally recommended along the line referring to commercial fertilizers; which, as far as they have become laws and enforced, have been very effective, but had we not better begin nearer home and recommend to our worthy Institute Director to have his instructors, the institute speakers, take for one of their chief subjects, "The most economical system of producing and applying stable manure, relative to farm fertility." I would also recommend, as has generally been done before, a resolution to prevent the printing on bags of anything but one column of figures showing the relative value of the fertilizer the sack contains. The other figures are cumbersome and misleading and do much harm to the average user of commercial fertilizer.

The CHAIRMAN: What is the pleasure of the Board concerning this most excellent report?

It was moved and carried that the report be received and published in the proceedings.

A Member: The other report we placed on file; I don't think the motion included that it should be published with the proceedings.

The SECRETARY: That is always understood.

The CHAIRMAN: We will now proceed to the Report of the Committee on Livestock, Dr. M. E. Conard, of Westgrove, Pa., Chairman. Is Dr. Conard in the room?

The SECRETARY: Mr. Chairman, I have not seen Dr. Conard this week, and I doubt very much whether he is here. No report has been sent to me, so I think we will have to pass that over.

A Member: Dr. Conard was taken sick last week and had to give up and go home, so I presume that is why he is not here.

A Member: I have just heard that Dr. Conrad is not well and is at home.

The SECRETARY: The Report on Feeding Stuffs is available to fill in just now, if it is your pleasure to call for it at this time.

The CHAIRMAN: Then we will have that report, by Mr. G. G. Hutchison, of Warriors Mark, Pa.

Mr. Hutchison then read his report as follows:

REPORT ON FEEDING STUFFS

By G. G. HUTCHISON, *Warriors Mark*

One more year has come and gone in our work as your servants in enforcing the law regulating the sale of feeding stuffs in Pennsylvania. We do not have anything startling to report to you this year.

Our Special Agent has visited 64 counties out of the 67 in the State, and in these counties he has visited 333 towns and cities. He did not secure samples in each town as he had secured samples in

other towns or places visited, of the same goods, and it would only have been a repetition to have taken samples at each place visited. It would have increased the work of the Chemist in the laboratory, but he made examinations of the packages to see that they were properly tagged and that the proper weights were on said packages.

In all, we secured, under the law, this year, 1400 samples. They have all been analyzed by our Chemist and reports made to the Secretary of Agriculture; also, reports made to the dealers and manufacturers. These analyses were made inside of 60 days, as the law requires, and in some cases they were analyzed inside of 30 days. It all depended upon the work that was being done in the laboratory at the time they were received.

The Chief Chemist received 200 samples from citizens of the Commonwealth for analysis, with a fee of \$1.00 with each sample. These have been analyzed in 15 days after being received and reports forwarded to the parties sending them in. This is a section of the law that stands as a protection to our citizens. They should make use of the same to find out what they are receiving. When a feed dealer buys a car of feed and has any doubt about it, he can send a sample of the feed to the Department of Agriculture, with a fee of \$1.00, and have the same analyzed, and by so doing he can keep himself informed of what he is buying. I would suggest that the samples should be taken from four different sacks and thoroughly mixed, and then a sample taken from that mixture. This would give a fair sample of the feed. A carload of feed costs anywhere from \$450 to \$600. We believe it would pay any dealer, when he has doubt in regard to the analysis or composition of said feed, to pay this small fee to keep a check on what he is buying.

This is a day of education, or one in which the State is trying to inform her citizens what they should buy to secure the greatest value for their money, and this is a day when many feed their animals for different purposes. The dairyman feeds for milk and butter, and he should make a study of the feeds on the market. If he does not know which will give him the best results, he should write to the Department of Agriculture or to the Pennsylvania State College and secure the information. It is yours for the asking, but we have farmers in this State who buy feed because it is cheap, and they give no attention to the analysis or to the certified composition that is on the tags or sacks.

I would call your attention to a number of farmers who bought a feed that was sold to them for Cottonseed Meal. They were buying it at a few dollars less per ton than the market price. It was sold direct from the car. At one town five carloads were sold last winter. We secured samples and found that it was not Cottonseed Meal, but a poor grade of Cottonseed Feed which contained a large amount of Cottonseed Hulls. If these farmers had sent to the Department of Agriculture a sample of this feed and had had it analyzed, they would have saved a large amount of money. I would say, dealers, as a rule, do not handle this feed. The way manufacturers get it on our markets is to get some honest man in the neighborhood to canvass and secure orders for it direct from the car. I would say to our farmers, where you buy direct, buy at a guarantee. You will have no trouble in securing a guarantee from a reputable firm or manufacturer.

We have found in the markets of Pennsylvania certain dealers, and especially grocery stores and company stores, selling feeds at short weights. We mean by company stores, where a chain of stores are situated at the coal mines or coke ovens in our State. These stores do a large trade among the foreigners who work in the mines or at the coke ovens. They sell them what is known as short weights. In some cases the sacks contain only 95 pounds, and in a number of cases they are as low as 92 pounds in place of 100 pounds. There are only a few manufacturers who put up these kind of packages. There is nothing in our law under which we can prosecute these dealers; our law only specifies that the number of net pounds shall be on the bags, but we find that these dealers are selling these short weight packages for a sack of chop or feed and the people who buy them are thus defrauded out of five to eight pounds on each sack.

Pennsylvania is one of the largest consumers of feeding stuffs. No figures are available which would show the tonnage sold during any period of time, and as there is no tonnage tax imposed, no accurate estimate of the number of tons of feeding stuffs sold during the year is possible. From what information can be obtained, however, it may be fairly concluded that the number of tons sold in Pennsylvania is high, as compared with the amount of feed consumed, that practically every manufacturer sold one or more brands in our State, and that it would be no small task for the officials in charge of the enforcement of the law to keep a watchful eye on all the feeds which are being offered for sale. We are, indeed, kept busy, but if it were not for the hearty support and co-operation of the manufacturers and dealers as well as the consumers, the success achieved would not be as great as it appears to be at the close of the year.

The fact that those interested in complying with our law and endeavoring to improve their brands of feed, have given us support and encouragement, is particularly gratifying to the Department. Too much praise cannot be given to all who have worked for "better feeds."

The year's work just completed, shows continued improvement in the character of feeding stuffs found on our markets. The number of prosecutions has decreased. In many cases the guarantees have been more than met. There were but a few complaints because of low protein-content, and our old friend, the unground weed seed, has been seen less often than was the case last year. As far as we are able to ascertain, rice hulls and peanut shucks have entirely disappeared from the feeds sold in Pennsylvania, and no wheat products were found to be adulterated with corn cobs, as was often the case a few years ago.

A new by-product has found its way into feeds, sold in this territory under the name of "Malt Sugar Grains." This product is very similar to Brewers' Dried Grains, and we are informed by the manufacturers that it is practically the same as Brewers' Grains except that instead of it being directly the product from the manufacturer of beer, it is the product from the manufacturer of wort which is used in flavoring certain breakfast foods. Barley malt is used in the process, leaving the grains, which are named by the manufacturers, "Malt Sugar Grains."

Another by-product is also being used as a feed to some extent in our State, under the name of "Refuse Middlings." This product is

the refuse from the manufacture of tin plate and is wheat middlings or wheat feed containing palm oil. We have been advised by certain tin plate mills that this product results from cleaning the tin plate, on the surface of which is a thin layer of palm oil, in a machine called a branner. The wheat middlings are placed in this branner and act as a cleaner of the plate and an absorbent of palm oil. The amount of palm oil retained by the middlings raises the content of ether-extract slightly over that naturally present. As far as we have been able to ascertain, there is no objection to the use of this product as a feed. There is a similar product, the sale of which this Department has objected to, which contains, in addition to the palm oil, an excessive amount of lime which is used with the middlings to enhance its scouring and cleaning properties. In one sample analyzed it was found that the amount of lime present was, approximately, 30 per cent.

One of our problems is to persuade manufacturers outside of the State to comply with the law, as is being done by some of our local manufacturers. This condition of affairs is well illustrated by two feeds of practically the same composition which were offered for sale by a dealer at the same price. One feed was compounded locally and was a good, clean feed; the other was produced in another State and contained a considerable proportion of weed seeds.

It appears that there are a few violators of the law still to be reckoned with, but their number is decreasing steadily. We believe that the majority of manufacturers are making an honest effort to comply with the law requirements, as well as with the spirit of the law, and are compounding their feeds as advertised. It is also believed that those who make no attempt to comply with the law, will not have the support of the manufacturers who are producing high grade goods from clean, wholesome products.

Pennsylvania recognizes the feeding value of the many by-products which are used in preparing the numerous brands of feeding stuffs sold, but it also recognizes that the law is evaded and fraud practiced where misleading terms are used in naming these by-products. A brand of feed, for example, advertised to contain corn, oats, alfalfa, wheat screenings, cottonseed meal, etc., where one would expect to obtain a reasonable proportion of good grade meal and clean, sound whole or cracked grains, is a far different quality of feed from one which contains instead a small proportion of spoiled corn, inferior oats, a little, low grade alfalfa, cottonseed meal, mostly hulls, and screenings, mostly weed seeds, instead of containing any wheat. The cereals may be there in the latter case, but the quality of nourishment is greatly different from what should be expected to be found. The year's work has shown that this form of misrepresentation has decreased materially, but there is still room for improvement. It is now possible to find in this class of goods in the majority of cases, enough clean, whole grains to justify their being named in the list of ingredients.

The adoption of feed definitions by the Association of Feed Control Officials has made it possible to clear up many misunderstandings in regard to the character of certain by-products. I herewith give the said definitions:

Alfalfa Meal is the entire alfalfa hay, ground, and does not contain an admixture of ground alfalfa straw or other foreign materials.

Blood Meal is ground dried blood.

Brewers' Dried Grains are the properly dried residue from cereals obtained in the manufacture of beer.

Buckwheat Shorts or Buckwheat Middlings are that portion of the buckwheat grain immediately inside of the hull after separation from the flour:

Choice Cottonseed Meal must be finely ground, not necessarily bolted, perfectly sound and sweet in odor, yellow, free from excess of lint, and must contain at least 41 per cent. of protein.

Chop is a ground or chop feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals.

Clipped Oat Refuse (term oat clippings not recognized) is the resultant by-product obtained in the manufacture of clipped oats. It may contain light, chaffy material broken from the ends of the hulls, empty hulls, light, immature oats and dust. It must not contain an excessive amount of oat hulls.

Corn Bran is the outer coating of the corn kernel.

Corn Feed Meal is the sifting obtained in the manufacture of cracked corn and table meal made from the whole grain.

Cornstarch By-product, with corn bran, is that portion of commercial shelled corn that remains after the separation of the larger part of the starch, and the germ by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Cornstarch By-product, without corn bran, is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent. of protein.

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided, that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent. of protein.

Craeklings are the residue, after partially extracting the fats and oils from the animal tissue. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

Digester Tankage is the residue from animal tissue exclusive of hoof and horn specially prepared for feeding purposes by tanking under live steam, drying under high heat, and suitable grinding. If it contains any considerable amount of bone, it must be designated *Digester Meat* and *Bone Tankage*.

Distillers' Dried Grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

Flax Plant By-product is that portion of the flax plant remaining after the separation of the seed, the waste fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds and the corticle tissue of the stem.

Good Cottonseed Meal must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color and must contain at least 36 per cent. of protein.

Grits are the hard, flinty portions of Indian corn without hulls and germ.

Hominy Meal, Hominy Feed, or Hominy Chop is a mixture of the bran coating, the germ and a part of the starchy portion of the corn kernel obtained in the manufacture of hominy grits for human consumption.

Malt Sprouts are the sprouts of the barley grain. If the sprouts are derived from any other malted cereal, the source must be designated.

Meal is the clean, sound, ground product of the entire grain, cereal or seed which it purports to represent; Provided, that the following meals, qualified by their descriptive names, are to be known as, viz: *Corn Germ Meal*, a product in the manufacture of starch, glucose and other corn products and is the germ layer from which a part of the corn oil has been extracted. *Linseed Meal*, the ground residue after extraction of part of the oil from ground flaxseed.

Meat Scrap and *Meat Meal* are the ground residues from animal tissue exclusive of hoof and bone. If they contain any considerable amount of bone, they must be designated *Meat and Bone Scrap*, or *Meat and Bone Meal*. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

Oat Groats are the kernels of the oat berry with the hulls removed.

Oat Hulls are the outer chaffy coverings of the oat grain.

Oat Middlings are the floury portion of the oat groat obtained in the milling of rolled oats.

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

Prime Cottonseed Meal must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellow, not brown or reddish, free from excess of lint, and must contain at least 38.6 per cent. protein.

Red Dog is a low grade wheat flour containing the finer particles of bran.

Rice Bran is the cuticle beneath the hull.

Rice Hulls are the outer chaffy coverings of the rice grain.

Rice Polish is the finely powdered material obtained in polishing the kernel.

Screenings are the smaller imperfect grains, weed seeds and other foreign material having feeding value, separated in cleaning the grain.

Shipstuff or *Wheat Mixed Feed* is a mixture of the products other than the flour obtained from the milling of the wheat berry.

Shorts or *Standard Middlings* are the fine particles of the outer and inner bran separated from bran and white middlings.

Wheat Bran is the coarse outer coating of the wheat berry.

Wheat Middlings or *White Middlings* are that part of the offal of wheat intermediate between shorts or standard middlings and red dog.

A comparison of the results of analysis of cottonseed meal received during the year will be of interest to those who are interested in the question of establishing a standard for crude fiber in cottonseed meal. Our law restricts the amount of crude fiber to 9 per cent. Of the 33 samples of meal guaranteed 41 per cent. of protein and averaging 42.17 per cent. the content of crude fiber was found to average 8.11 per cent. Of the 48 samples of meal guaranteed 41 per cent., 15 of which fell slightly below this guarantee, the average protein being 41.32 per cent., the content of crude fiber was found to have an average of 8.67 per cent.

The money for the enforcement of the Pennsylvania law is raised by a direct appropriation from the Legislature, instead of by a tonnage tax or by license fees, as is the case in many states. And while it is to be regretted that any state should have to spend money to keep manufacturers in line and protect the feeding stuff consumers, it is gratifying to know that the enforcement of the law has resulted in a great deal of good and profit to those concerned. Our law has worked well.

From the words of approval and encouragement received, the method of enforcing the law seems to have met with approval. "Advertise what is sold, and sell what is advertised," should be the slogan of the manufacturers and dealers. It is believed that this idea was in the mind of those who framed the feeding stuff law. It was thought advisable to prohibit the use of a few by-products of little or no feeding value and to restrict the use of other by-products. The restriction being intended to make it possible for a proper balance of the nutrients or feeding value in the completed feed. While a few problems yet remain to be worked out satisfactory to all concerned, it is indeed encouraging to feel that the year's work has resulted in more good than was anticipated.

There is, as is well known, a number of by-products used, the actual feeding value or digestibility of which is not accurately known. Some work has been done along this line recently, and it is earnestly hoped that in the near future those who are in a position to conduct careful, accurate digestion experiments with feed, will study some of these by-products in an effort to determine their real feeding value.

It might be of some information and interest to the members of the Board and others, to just know where these by-product materials come from. By the direction of your honored Secretary, last May, I made a trip through the Middle West, as far as Minneapolis, and visited a number of mills to become better acquainted where these numerous by-products were derived, and to get a better idea of the milling and feed industries of the United States.

I beg to state to you that a visit to Minneapolis will amply repay anyone who may have any interest on this subject of the manufacture of flour. In the formation of the Mississippi River at Minneapolis, there is a natural dam or falls known as Saint Anthony's Falls. This furnishes large water power which is being utilized to drive the rolls and machinery in a number of large flouring mills.

These mills are built of limestone. On looking at them from the outside one is impressed with the old stone mills of Eastern and Middle Pennsylvania, only, of course, they are larger and a great many more stories in height. To those of you who have never wit-

nessed the handling of large amounts of wheat, it is very interesting to see a car unloaded. At one of these mills they received 10,000 bushels of wheat the day I was there. The wheat is unloaded with large scrapers which are propelled by steam power. The elevators receiving the same, the wheat is never touched by hand. It is conveyed to the top of the building in large storage bins. When the wheat is on the ground it is started through a system of cleaners. They first take out the straw and larger portions of refuse but principally pieces of straw from one to three inches long, and this is the only material that I saw coming out of wheat that is burned. They separate it, taking out all the impurities down to one-half of one per cent. Then they start in to separate the screenings, which consist of the small grains, weed seeds, flax seed, mustard seed, and all other impurities. The mustard seed is removed from these screenings, as well as the flax seed. Both of these commodities are valuable, one for the manufacturer of mustard, and the other for the manufacturer of oil and oil meal. The balance is ground up very fine and sifted or bolted and sold to the manufacturers of the different kinds of commercial feeding stuffs, but principally to the molasses feed people; thus you see nothing is wasted.

These weed seeds analyze about 15 per cent. of protein, from 3 to 4 per cent. of fat and 8 per cent. of fiber. Years ago the weed seeds were fed to sheep. I saw one place west of Aurora, Ill., where they had large barns constructed for the feeding of sheep, and they were fed largely on screenings, but at the present time, I am told, it is more profitable to convert them into commercial feeds. The chicken feed manufacturers buy largely of this unground product for the manufacturing of chicken feeds. When the flouring mills are running full capacity, they produce 36,000 barrels of flour in 24 hours. This will give you some idea of the amount of bran and middlings that is produced at this one point. It is interesting to see what care is taken in the manufacture of a high grade No. 1 spring wheat flour. At each mill there is a chemist in charge with a number of assistants. They make a thorough analysis of the flour. It is taken from the laboratory to the baking department. This is a very interesting process. The flour and the dough is weighed, the amount of water or moisture that the dough takes up is ascertained, the dough is then placed in the oven, which is the most beautiful oven my eyes have looked upon. It is then baked and weighed again, and in this manner they ascertain how much bread can be made from certain brands of wheat.

They also manufacture pastry flour. In charge of this department is a young lady who is baking rolls, biscuits, pies and different pastries, and she helps you liberally with good dairy butter. Strangers are treated very courteously by all those connected with the large mills, and it seems a pleasure for them to show you through and give you all the information in regard to their producing of these high grade flours that we find on our markets.

Among my other visits I went to Milwaukee. At this place is situated a number of feed manufacturers. Here I visited a plant manufacturing molasses feeds and saw the process of the mixing and the adding of the molasses, and all connected with it. Connected with this plant is a large corn mill. This is one of the most interesting places that was my pleasure to visit. At this plant they had a chemist who supervised the mixing of the molasses feeds and to take

great care that their feeds were manufactured in such proportions that would comply with the Pennsylvania law. I might give you a large amount of interesting data that I collected upon this trip, but it would make this paper too long for the time allotted me, but I would like to say in regard to farming, that we have some advantages that they do not have in the West, and they have a number of advantages that they do not possess.

I would just like to say here, which may be a little diversion, that the farmers of the West are endeavoring to build up herds of cattle suited to their needs of the neighborhood in which they live. In Wisconsin, which has become a great dairy herd, you see thousands of Holsteins. In Illinois you see thousands of beef varieties, and in all sections they breed the cattle that are suited to their individual purpose. I am sorry to see in Pennsylvania that our farmers do not seem to breed cattle for any definite purpose, and when they breed cattle for milk, then it is, as I stated before in this paper, that you can feed for a purpose. If you breed for beef, you feed for a purpose. All these are subjects that farmers in the future will have to be educated to do.

I here give a list of the counties and towns as visited last year, the number of samples taken in each, and other information which will be of value to the citizens of the different counties who are interested in this subject.

TABULATED STATEMENT

ADAMS—		BEAVER—	
Gettysburg,	8	Beaver Falls,	15
New Oxford,	4	New Brighton,	3
Littlestown,	12	West Bridgewater,	4
McSherrystown,	0	Beaver,	4
	24	Rochester,	0
		Monaca,	0
		Freedom,	0
			26
ALLEGHENY—		BEDFORD—	
Hites,	1	Bedford,	7
Tarentum,	1	Everett,	0
Wilmerding,	4		7
Pittsburg,	8		
Wilkinsburg,	10		
Carnegie,	8		
East Liberty,	3		
Braddock,	11		
McKeesport,	13		
Homestead,	7		
Pitcairn,	6		
East Pittsburg,	4		
Turtle Creek,	4		
Duquesne,	0		
Hays,	0		
Copeland,	0		
Verona,	0		
	80		15
ARMSTRONG—		BLAIR—	
Leechburg,	5	Tyrone,	4
Kittanning,	12	Altoona,	27
Ford City,	5	Juniata,	3
Freeport,	2	Hollidaysburg,	3
Apollo,	0	Martinsburg,	8
Parkers Landing,	0	Bellwood,	2
	24	Gaysport,	0
			47

TABULATED STATEMENT—Continued.

BRADFORD—		CHESTER—Continued.	
Troy,	12	Phoenixville,	0
Wyalusing,	0	Malvern,	0
Towanda,	8	Avondale,	0
Sayre,	0	Paoli,	8
Canton,	0		<hr/>
Athens,	0		36
	<hr/>	CLARION—	
BUCKS—	20	Clarion,	10
Doylestown,	12	New Bethlehem,	0
Quakerstown,	13		<hr/>
Perkasie,	0		10
Chalfont,	0	CLEARFIELD—	
	<hr/>	Munson,	4
BUTLER—	25	Wallacetown,	3
Butler,	19	Clearfield,	5
Harmony,	5	Du Bois,	11
Evans City,	2	Curwensville,	0
Mars,	8	Houtzdale,	0
Zelienople,	5	Oseola,	0
Callery,	0		<hr/>
Slippery Rock,	0		23
	<hr/>	CLINTON—	
CAMBRIA—	39	Lock Haven,	11
Johnstown,	19	Mill Hall,	1
Conemaugh,	2	Renovo,	0
South Fork,	6	South Renovo,	0
Ebensburg,	2	Flemington,	0
Patton,	7		<hr/>
Carrolltown,	0		12
Cresson,	0	COLUMBIA—	
Barnesboro,	0	Catawissa,	2
Dale,	0	Bloomsburg,	0
Ferndale,	0	Berwick,	0
Franklin,	0		<hr/>
Gallitzin,	3		2
Hastings,	0	CRAWFORD—	
Lilly,	0	Titusville,	7
Portage,	0	Linesville,	0
Sealp Level,	0		<hr/>
Spangler,	0		7
	<hr/>	CUMBERLAND—	
CAMERON—	43	Mechanicsburg,	8
Emporium,	10	Shippensburg,	8
Driftwood,	0	Newville,	5
	<hr/>	Mt. Holly Springs, ...	0
CARBON—	10	Lemoyne,	0
East Mauch Chunk,	4	Carlisle,	6
Mauch Chunk,	0	Shiremanstown,	0
Lehighton,	4		<hr/>
	<hr/>		27
CENTRE—	8	DAUPHIN—	
Bellefonte,	3	Middletown,	1
Center Hall,	8	Harrisburg,	15
Howard,	0	Steelton,	0
Milesburg,	0	Penbrook,	0
Philipsburg,	7	Millersburg,	0
	<hr/>	Hummelstown,	0
CHESTER—	18	Highspire,	0
Downingtown,	5		<hr/>
West Chester,	10		16
Kennett Square,	10	DELAWARE—	
Embreeville,	2	Chester,	10
Pocopson,	3	Media,	0
Westgrove,	5		<hr/>
			10
		ELK—	
		Ridgeway,	5
		St. Mary's,	7
		Johnsonburg,	0
			<hr/>
			12

TABULATED STATEMENT—Continued.

ERIE—		LANCASTER—Continued.	
Erie,	21	Bareville,	4
Belle Valley,	0	Ephrata,	2
Union City,	4	Gap,	8
Corry,	8	New Holland,	6
Waterford,	0	Witmer,	0
	<hr/>	Bird-in-hand,	0
	33	Ronk,	0
FAYETTE—		Kinzer,	0
Connellsville,	2	Christiana,	0
Uniontown,	12	Rohrestown,	0
S. Brownsville,	4	Mountville,	0
New Salem,	4	Columbia,	0
	<hr/>	Elizabethtown,	0
	22	Mount Joy,	0
FOREST—		Quarryville,	0
Tionesta,	3	Strasburg,	0
			<hr/>
			72
FRANKLIN—		LAWRENCE—	
Chambersburg,	19	New Castle,	13
Mercersburg,	2	Mahoningtown,	3
Lancaster,	2		<hr/>
Waynesboro,	0		16
Greencastle,	0		
	<hr/>	LEBANON—	
	23	Lebanon,	11
GREENE—		Jonestown,	6
Waynesburg,	2	Meyerstown,	6
HUNTINGDON—		Annville,	2
Spruce Creek,	4	Cleona,	1
Huntingdon,	6	Palmyra,	8
Mt. Union,	3	Avon,	0
Mapleton,	0	Prescott,	0
	<hr/>		<hr/>
	13		34
INDIANA—		LEHIGH—	
Indiana,	7	Allentown,	5
Blairsville,	5	Slatington,	3
Homer City,	1	Bethlehem,	1
Saltsburg,	0	Emaus,	2
Clymer,	0		<hr/>
Ernest,	0		13
Creekside,	0		
	<hr/>	LUZERNE—	
	13	Wilkesbarre,	26
JEFFERSON—		Nanticoke,	7
Lindsey,	3	Luzerne,	6
Punxsutawney,	5	Kingston,	0
Brookville,	5	Pittston,	0
Prescottville,	4	Plymouth,	0
Reynoldsville,	6		<hr/>
Brockwayville,	3		39
Falls Creek,	0	LYCOMING—	
Big Run,	0	Williamsport,	18
	<hr/>	S. Williamsport,	0
	26	Muncy,	0
JUNIATA—		Montoursville,	0
Port Royal,	1	Jersey Shore,	1
Mifflin,	3	Antes Fort,	5
	<hr/>		<hr/>
	4		24
LACKAWANNA—		McKEAN—	
Scranton,	24	Port Allegany,	5
Dunmore,	9	Smethport,	4
	<hr/>	Mount Jewett,	0
	24	Kane,	3
LANCASTER—		Eldred,	0
Lancaster,	24	Bradford,	12
Lititz,	8		<hr/>
Manheim,	13		24
Leola,	7		

TABULATED STATEMENT—Continued.

MERCER—		SNYDER—	
Sharpsville,	1	Selinsgrove,	1
Sharon,	9	Middleburg,	0
Farrell,	1		
Mercer,	0		1
Greenville,	0	SOMERSET—	
West Middlesex,	0	Windber,	8
	11	Berlin,	0
MIFFLIN—		Hooversville,	0
Lewistown,	14	Meyersdale,	0
McVeytown,	0	Rockwood,	0
	14	Somerset,	11
MONROE—		Stoystown,	0
East Stroudsburg,	8	Holsopple,	6
Stroudsburg,	0		25
	8	SULLIVAN—	
MONTGOMERY—		Dushore,	4
Pottstown,	15	SUSQUEHANNA—	
Norristown,	12	Montrose,	10
Lansdale,	13	South Montrose,	1
West Point,	10		11
Ambler,	6	TIOGA—	
Edge Hill,	8	Westfield,	4
Conshohocken,	0	Knoxville,	8
Hatboro,	0	Wellsboro,	23
North Wales,	0	Tioga,	0
	64	Osceola,	0
MONTOUR—		Mansfield,	0
Danville,	8	Lawrenceville,	0
NORTHAMPTON—		Elkland,	0
Easton,	8		35
Bethlehem,	2	UNION—	
	10	Mifflinburg,	8
NORTHUMBERLAND—		Lewisburg,	2
Sunbury,	15		10
Watsonstown,	0	VENANGO—	
Shamokin,	3	Emlenton,	1
Northumberland,	0	Oil City,	13
Mount Carmel,	0	Franklin,	4
Milton,	8		18
	26	WARREN—	
PERRY—		Warren,	11
Duncannon,	3	Clarendon,	0
Newport,	4	Columbus,	0
Millerstown,	4	Youngsville,	0
Marysville,	0		11
	11	WASHINGTON—	
PHILADELPHIA—		Monongahela,	6
Philadelphia,	13	Charleroi,	8
POTTER—		Hickory,	4
Coudersport,	8	Washington,	19
Galeton,	0	Houston,	5
	8	Canonsburg,	8
SCHUYLKILL—		Donora,	0
Pottsville,	7		50
Tamaqua,	0	WESTMORELAND—	
St. Clair,	0	Latrobe,	6
Minersville,	0	Greensburg,	12
	7	Parnassus,	5
		Vandergrift,	4
		New Kensington,	9
		Mt. Pleasant,	4
		Scottsdale,	16
		Irwin,	1
		Jeannette,	6

TABULATED STATEMENT—Continued.

WESTMORELAND—Continued.

New Stanton,	2
Hunker,	2
Derry,	5
Youngwood,	0
Penn,	0
Monessen,	0
	<hr/>
	72

YORK—

York,	34
Spring Grove,	4
Hanover,	8
Wrightsville,	0
Stewartstown,	0
Red Lion,	0
Glen Rock,	0
Dallastown,	0
	<hr/>
	46

WYOMING—

Tunkhannock,	5
Meshoppen,	6
	<hr/>
	11

Number of counties visited, 64
 Number of towns visited, 333
 Number of samples taken, 1400

We have prosecuted quite a number of cases for violation of the law this year. Wherever the defendants violated the law, in the opinion of the Secretary, prosecution was brought and conviction has been secured in all cases, fines being paid, said fines having been turned into the State Treasury, receipts for the same are on file in the office of the Chief Chemist. In a number of cases the violations were more technical than with an intent to violate the law. In these, cases through correspondence and conferences, the evil was corrected. This was more in regard to the branding of the goods and misunderstanding in regard to terms.

I wish here to publicly thank the Master of the Pennsylvania State Grange, Hon. William T. Creasy, for the kind words that he spoke in regard to the Department of Agriculture in his annual report, especially that referring to the enforcement of the feeding stuffs law; and I also wish to thank the editors of the National Stockman and Farmer, of Pittsburg, for their kind reference to our work and for their words of commendation. Our great object is to so perform our work that it will meet with the approbation of the farmers and stock feeders of Pennsylvania. Personally, I wish to extend my thanks to the Secretary of Agriculture for the confidence he has placed in me in carrying out the prosecutions and other work of the year; also, to the Chief Chemist, James W. Kellogg, for his hearty co-operation and many acts of kindness; and to John F. St. Clair for the faithful manner in which he has performed his duty as Special Agent.

The CHAIRMAN: What is the pleasure of the Board concerning this report?

It was moved and carried that this report be received and placed on file.

The CHAIRMAN: Next in order would be the discussion of these different reports.

The SECRETARY: Let me say there will be half an hour that can be devoted to discussion, and a good deal can be said in that time if you will go at it promptly.

The CHAIRMAN: That's right, and I think it is right and proper that those important reports should be discussed. We take up the Fertilizer Report first, I suppose?

The SECRETARY: Any of the reports will be regarded as open for discussion.

A Member: Mr. Chairman, as for the feed value of cottonseed hull, what is that?

MR. HUTCHISON: From the information I get from the Chemist, it has very little feeding value. Some people claim there is a feeding value in cottonseed hulls as a roughage. I had a friend at Morris' Cove, who has been buying this material I refer to. He said that he has getting out of that about as good results as he did with bran. He feeds it with ensilage, but I have my doubts whether he is getting as good results as he thinks. It was selling, last year for only \$2.00. If you don't have the roughage, it might be of some benefit to mix in; but the majority of farmers have that, and what is the use of paying \$36.00 or \$32.00 for this, the price they sold at last year?

A Member: How about what is called Union Grain?

MR. HUTCHISON: That's a good feed. I could get the analysis in a minute, in the Bulletin. It is made from Distillers' or Brewers' Grains, is high in protein and a good compound feed.

A Member: Mr. Chairman, I would like to ask if there has been any effort made to ascertain the value of buckwheat hulls? Our millers throw them away.

MR. HUTCHISON: Well, they are pretty wise chaps. I don't think there is very much value in buckwheat hulls. There isn't very much buckwheat used in our country.

The SECRETARY: When ground fine, they make good black pepper.

MR. HUTCHISON: Some people grind them up fine and use them with buckwheat meal and call it buckwheat feed, but just the buckwheat hulls have very little value. I was going to say that we have discovered a new feed on the market. It's peat, treated with certain chemicals, and then they call it humus. We had a sample sent to the office and they are trying to have it sold. They say if you feed it, there might not be so much colic, but we are not going to endorse. They are treating sawdust and trying to get that on the market. They can't get it on while this law is on the statute books at all. They are studying their heads off to get something to make money out of. If you will buy feed with high protein and feed and low fiber and consider it and work it out in your feeds, you will get the best results. It won't do to use a feed that is all high in protein and fat and low in fiber, it would be too concentrated, but there is where you get your money value. The chicken feeds have been improved quite a bit. You cannot get better chicken feed than good red wheat at a

dollar a bushel, and get buckwheat and raise some sun-flower seed. Sun-flowers are beautiful when growing and if you will take the grains you have about your farm and mix them up, you will save paying \$50.00 and \$60.00 a ton for chicken feed.

MR. YOUNG: I would like to know what is the relative value of cottonseed hull, buckwheat hulls and wheat chaff?

MR. HUTCHISON: Well, you are getting pretty near it, Brother Young.

The SECRETARY: Why don't you include sawdust?

MR. YOUNG: Might add that.

The SECRETARY: I think if you had added that, you would have struck it pretty nearly right.

MR. HUTCHISON: There are some people in the West that did make feeds and use oat hulls as a mixture, and eight years ago considerable of that feed went on the market—oat chaff, oat straw, but that time is past, those things are gone by, we are working with new propositions, we are not bothering with this hull business very much in our State. When the Referee Board meets, the Chairman, the Secretary here, generally rules out all that. He has his eye on all those things; and analyses are laid before him and he goes over them very carefully, and they know, out in the West, who is Secretary of Agriculture and know that he will not pass any of these frauds.

MR. SHARPLESS: What is suprean made of?

MR. HUTCHISON: I put all the molasses feeds in one category and they are all coming up to the standard that has been set. Suprean is a very good molasses feed, made of cottonseed meal, oats, barley, wheat, malt sprouts, molasses and broken grains mixed; a small amount of wheat seeds and $1\frac{1}{2}$ per cent of salt.

A Member: Quite a number of people in our county are using cottonseed meal and there is a very great difference in the color of it. Has the color of it any material bearing as indicating a difference in its feeding value, or is the color only due to its lying around previous to being used?

The SECRETARY: Mr. Chairman, it must not be forgotten that Mr. Hutchison is not a chemist, he is a layman; I am sorry the chemist is not here this morning. My own thought is that the difference in the color results from the fact that some of it is the old process meal and some the new. The new process takes more of the oil out of the meal than the old.

A Member: I said cottonseed meal.

The SECRETARY: I thought you said linseed.

A Member: Quite a number of people in our county are going out of the milk business and feeding cattle for beef and using quite a good deal of cottonseed meal. They take corn fodder, hay and cottonseed meal and other things that they grow and it's a good deal of interest to us to know whether the color of the cottonseed meal we buy has anything to do with its feeding value.

MR. HUTCHISON: If you take our Bulletin, Number 223 you will find an analysis of all the cottonseed meals in the State of Pennsylvania. Now there is some fraud in the sale of cottonseed meal, not in the meal, but in the manner of its being shipped into our State, and as it has come up now, I will just make a statement of that. They are shipping it in old sacks and they are shipping short weight. It comes, you know, largely from the South. I have just finished an investigation that I have been making. When you people buy a carload of cotton seed meal and find it short weight, in sacks, you should make a claim on the man who shipped it and report it to the Secretary of Agriculture or to Prof. Keillogg or myself, and we will take the matter up. I just finished investigating a carload in Morris' Cove, where I found a shortage of one ton in every twenty tons. It was sold on a draft, of course. I found the sacks running from 82 pounds to 100 pounds; a great many were 90 pounds. That's a fraud. Our State protects you against it, says it must be the net weight on the package, in what you buy, and you men who are buying it should make complaints. We have had another complaint from one of the eastern counties, of a shipment of meal there that was received last week, short weight. We cannot compel them to put the amount in any sack. I see a bill was offered yesterday, I don't know whether it will cover our work or not, but we can compel them to tell you on the card or sack how many net pounds it contains. These cards call for 100 pounds in each sack, the cards that were on these sacks, but if we prosecuted in this instance, we would be prosecuting the innocent man that paid \$500.00 for his carload of meal. These men who ship the meal live down in Tennessee and it's a hard matter to work that out, but if people keep an eye on that cottonseed short weight and report it, I will try to work it out and stop it.

A Member: I had occasion last summer to buy some lime by the bushel. There is a standard weight for caustic lime, as I used to understand it. it ought to weigh about 80 pounds to the bushel and we bought some lime and took the trouble to weigh it and weighed anywhere from 55 to 75 pounds to the bushel and I objected to it, said I wasn't getting sufficient lime. I was buying it, however, by the bushel. Is there any standard weight for a bushel of caustic lime?

The SECRETARY: In answer to that question, I would say that I doubt very much whether there is any legal weight in the State of Pennsylvania; but 80 pounds is regarded as the standard weight for lime, that is burned lime, stone burned before it is slacked by coming into contact with the air.

A Member: That was my impression, but I got 55 to 75 pounds to the bushel.

The SECRETARY: Well, you didn't get enough.

MR. HUTCHISON: If you would write to the American Limestone Company, Tyrone, they'd give you that information. They are reputable people and will give you an answer to that question.

A Member: I would like to ask Brother Herr how much he has to pay for lime at Lancaster; did you buy it by the ton?

MR. J. ALDUS HERR: No, I bought it by the bushel, and I got suspicious of it and weighed it; we happened to bring only a small portion, twenty bushels, and put it in old sacks and had platform scales and weighed each bushel, and the result was 55 or 75 pounds. It didn't take me very long to tell them about it.

A Member: I did not weigh my lime, but it cost me \$3.25 a ton; that's the Muncy lime, bought at Readers.

The SECRETARY: Mr. Chairman, I understand there is a gentleman present who wishes to take a photograph of the State Board of Agriculture. I said this morning, when I was approached upon that subject, that I thought we could give him the opportunity. I supposed it was to be a flashlight picture right here. I understand now that it cannot be taken unless we go outside. I don't believe we have the time; yet, if the members of the Board are anxious to have a picture of this kind and wish to adjourn for ten minutes for that purpose, I shall not be in the way.

The CHAIRMAN: The photographer tells me now that he can take it with the flashlight, though I suppose he'd rather take it on the outside.

The SECRETARY: Well, whenever he is ready, we will stop for a minute.

A Member: I object to that; I never saw a good flashlight picture yet; you wouldn't know whether you are white or black.

A Member: I don't think we are anxious to have our pictures taken; our wives haven't forgotten us.

A flashlight photograph was taken a little later.

A Member: It is getting to be an important question, the lime question, and there are prepared limes on the market, just a simple ground rock and some mixed with fertilizers. I want to caution the buyers of ground rock; there is a concern in an adjacent state grinding up raw stock and selling it at what seems to be a reasonable rate, but the analysis of the lime is very low, it is down as low as 70 and 60, frequently; in fact, it contains too much cement and other materials, so it is really a very low grade lime and I think the necessity for the analysis of lime is very important; it has got much to do with its value and the price.

A Member: I am sorry there is not more discussion on Mr. Herr's report on conservation of manure. I think there is nothing connected with farm life in which there is as much loss and neglect as the manure question. The farmers leave the manure lay in the barnyard and burn up and evaporate and there's a wonderful amount of loss. I am sorry there is not more discussion of it at institutes and farmers' meetings, and I am sorry again that this paper is not more discussed. You will talk about lime and about commercial fertilizers and everything else, but let this important subject drag along and we will never get much out of it. We ought to have more discussion today on the conserving of manure.

A Member: I concur with the gentleman. I think that Brother Herr's paper was one of the best. We have had good ones, but I think his is one of the best. I don't know how you are going to educate the farmer to take care of the barnyard manure. Right through the country, especially in Tioga, where I live, you will see it thrown out of the barn and lay there for years, and that very same man will go into town and buy commercial fertilizers and then complain of hard times and poor crops. If somebody has got a remedy to get these farmers in the notion of keeping their barnyards cleaned up and taking the proper care of barnyard manure, there would not be half as much spent for commercial fertilizers.

MR. J. ALDUS HERR: A few days ago, in fact last Saturday, I traveled about a hundred miles and counted some fifty odd farms that I passed by close enough to see and out of the fifty odd there were over forty that the manure was lying in the barnyard, leeching. Now there isn't any excuse whatever, as far as stable manure is concerned, you never have more, you never have as much as when you first get it; therefore take care of it. If you want to leave it to leech take it out on your land and leave it to leech there. That, I think, is the simplest means and the very best way that we can learn to take care of it. Now I don't say you can all do as we do, that is not the idea, but every week the manure is taken from the stable and put on the land, barring a blizzard, when we cannot get out, or an excessive rain when the soil is too wet, or probably one week in harvest. Now, the entire year, no matter whether our crops are in or not, if our fields are all in crops, the manure that accumulates is put on a permanent meadow. One man said, "You are a dunce, Herr, to put that manure in a meadow," but I claim we are not; we work our meadows, why not feed them? I had a meadow of fifteen acres that would not produce. I took all manner of advice, but it would not respond and I came to the conclusion it was poverty stricken, and for twelve years we have given it a top dressing of stable manure and it produces and so will anybody else's meadow if they will take care of it.

A Member: Did you put any lime in your manure?

MR. HERR: It was nothing but stable manure; we haven't used a thousand bushels of lime in ten ears.

MR. HUTCHISON: I took a trip in Mifflin county, where a good many of the plain people live, took the trip in an automobile and was

talking to those good men in that valley, it's a limestone country lying back to Lewistown, and one of the most beautiful stretches of country the eye has ever looked upon, and I talked to those men in regard to the process of keeping up their farms. They feed two stables, a good many of them, of cattle a year. In the Peachville settlement they take care of their manure and put it out; they feed their cattle on the farm as was stated this morning and then they take care of their manure and put it on the land, and oh, how that land responded and how prosperous those men are and what beautiful homes they have and how they take care of them, and I believe it is the system, the old system of feeding those steers on the farm, turning them into beef and getting a fair price for them and putting the manure back on the land. It's good limestone land. If any of you men have a chance to take a trip up into that country from Stone Mountain over to Jacksonville, you ought to do it. It just filled my soul to look out over that prosperous country. They mow right along the roadside and paint their barns and houses and it looks like that country we read about, to a farmer's eye, and it's right here in Pennsylvania! There's no more beautiful sight, those plain people, those Amish, who are putting back on the soil what they have taken out of it, putting that manure onto the land, following the principles laid down of feeding back to the soil what is taken from it.

MR. TAYLOR: The question I wanted to bring out was that the old system of farmers hauling manure out once a year is indeed very wasteful. My farm is close to a city and I used to haul out manure and put it in a large pile and burn it to pieces, and I am confident that is absolutely no good; I would rather haul out straw and scatter it over my field than burn up manure and scatter the ashes—I would get more for it. The manure I like the best is manure with lots of straw in it.

A Member: Just one thought that perhaps has been overlooked, in applying the manure to the land; that is, that that manure ought always to be applied to a living plant. I think too many farmers who have tried this process of hauling manure from the stable have made the mistake of putting it on the bare land, and have found that they got little or no results. Manure ought always to be applied to a living plant, and then, when the action begins, the plant is there to take hold of it. Our practice has been, on our farm, for the last four or five years, to put it on the new seeding, and when that is covered, on the rest of the meadow land. I believe, in connection with this same question, too, that we are gradually getting away from the notion that you have to plow that manure under. We would much prefer to get it on the sod and then plow the sod under; I believe it is a much better practice.

MR. KAHLER: I understood a gentleman to rather intimate that he got very little from lime. I believe it has already been brought out here that lime is necessary to agriculture. I believe we have use for lime; I know that from my own standpoint it has a use; we get great benefit from it.

The CHAIRMAN: This is all very interesting, but time is passing.

The SECRETARY: We have got five minutes yet before Dr. Sparks will have the floor, and if the photographer is ready, he can crack away with his light.

(A flashlight photograph was then taken.)

The CHAIRMAN: Next we will have an address by Dr. Edwin E. Sparks, President of State College.

Dr. Sparks then spoke as follows:

ADDRESS

By DR. E. E. SPARKS, *State College, Pa.*

I do not often resort to manuscript, but I have some facts here that I want to present to the Board, and therefore I will crave your indulgence while I read with interpolations. I want to show you, if I can, some of the latest phases of agricultural education. Expansion of the field and work and enlargement of the study, is naturally connected with the growth of education, and the great difference, from time to time, is the introduction of new subjects and especially what we call the practical in education. A hundred years ago there was a great demand for teachers of Greek and Latin. Nowadays, they are a drug on the market. Forty years ago, there was a great demand for teachers of Civil Engineering; nowadays, you can get teachers of Civil Engineering nearly any place. Ten years ago there was great demand for teachers of Electrical Engineering; now, there is a plentiful supply. Just at present there is a great demand for teachers of Agriculture. These things change from time to time in response to the demand of educators. That was illustrated fifty years ago when, at the dawn of the present manufacturing period, the United States Government established the so-called land grant colleges to teach Agriculture and the Mechanic Arts, the latter now known as Engineering. They number 67 and have an enrollment of 100,000 students. At first the demand from these colleges was along manufacturing lines. Following the Civil War we had a great outburst of manufacturing. At the time of the Civil War, if we said we wanted an electrical engineer, nobody would have known what we meant. Twenty-five years ago if we had said, "We've got a student getting ready for work as an electro-chemical engineer," no one would have comprehended. The demand for men trained in these arts attracted students, provided instructors and constructed work shops and class rooms and laboratories. In the meantime, agriculture was neglected to the role of Cinderella. In 1900, forty years after all these colleges had been established, one in every state in the Union, there were only 6,000 students in agriculture as against 9,000 in engineering. Why? Because engineering had the "call" as they express it, in popular demand. These colleges will always reflect the demand of the public. Within the last ten years, the tide has turned and is now setting in toward the agricultural courses with ever increasing strength and velocity. Last year the number of students in the different land

grant colleges pursuing agricultural studies, increased 40 per cent., while those taking engineering courses, decreased 10 per cent. There is a State College in every state in the Union, and even one in Hawaii and one in the Philippines. You see how the supply is shifting around to meet the popular demand. This right-about-face is a thing we want to study. "Take no thought for your life," says the Holy Scripture, "what ye shall eat and what ye shall drink"; but contrary to this injunction, our principal concern at the present time seems to be how to get something to eat and something to drink, and we need only a reincarnated Dr. Malthus to come along now and get us into a semi-panic over the fear that in a short time we shan't have enough food to feed the people.

I shall not exhaust your patience and consume your time by attempting to find the cause of this revival of the primitive art of tilling the soil. In brief, I attribute it to the fact that the vast heritage of public lands lying always to the west of the advancing population is now well-nigh brought under cultivation and no longer supplies a refuge for restless spirits. The "Go west, young man" of the sage of Chappacua has now become "Go down into the soil, young scientist." Intensive rather than extensive cultivation is necessary. A second cause may be found in a reaction from the movement toward the cities, which prevailed for a century, and which raised the proportion of urban-dwellers from three per cent. to thirty-five of the total population. This reaction has already provided the trolley and motor car to transport us to and from business; has resurrected the country tavern to feed us; has restored the country gentleman's estate for those who can afford it and has furnished golf links for our recreation.

Still another reason for the return to Agriculture is seen in the prevalent alarm at the abuse and possible exhaustion of our natural resources. Railway companies have been sufficiently far-sighted to discern that lumbering is well-nigh exhausted except in remote regions; that mineral resources must in time diminish and that only one dependable source of producing freight for transportation remains, viz., the products of the soil. In consequence, the transportation companies are expending large sums in educating the farmer to raise larger crops and to produce a surplus for transportation. Educational trains are run, lectures given, seed distributed, prizes offered, breeding animals imported, and trained experts placed at the disposal of farmers residing along the railway lines.

The exmination into the increased cost of living during which the ultimate consumer has placed the blame upon every possible cause except his own extravagance, is no doubt another reason for the renaissance of Agriculture. When a home-made egg costs more than an imported orange, the plain hen assumes a new importance as a source of possible wealth, especially with her climatic adaptability. When the despised potato retails for a dollar a bushel, Mr. Common-people must have a little garden to circumvent the rapacious middleman dealer.

Under this pressure of terminal finance—that is, making both ends meet—Adam has returned to his delving and Eve may yet go back to her spinning—if Mrs. Horatius will consent to hold the *bridge* in her stead.

May I add still another less evident and more problematical cause of this reversal of public interest. Is it not possible that the manufacturing era which has absorbed our activity, utilized our capital and made our fortunes during the past forty years, is losing its hold; has, perhaps, satisfied a demand; and that national energy, in seeking new lines of development, has returned to its old occupation. Perhaps we are entering upon an agricultural era which may supplement or even supplant the age of manufacture. May it not also be true that some of this "back to the farm" movement is a direct result of the manufacturing period which built fortunes in cities and supplied means to go back to the farm as an agriculturist if not a farmer.

Up our way we have been a long time trying to get at the difference between a farmer and an agriculturist. Some of these distinctions are drawn by some people, for instance: Booker T. Washington says that if a white man shaves you, it's in a tonsorial parlor, and if a black man shaves you, it's in a barber shop; and so we have been trying to make the same distinction. Dean Hunt came back to the College from a trip last year and said: "I have found a real agriculturist; he is a banker in the city of Philadelphia; he owns a farm out near the city and his manager told me that if he had a deficit any one year on his farm of more than \$10,000.00, the owner required an accounting." He said, "That banker is an agriculturist; he is willing to stand a \$10,000.00 deficit to make a show farm." I offer that story with this suggestion: is it not possible that we have made enough money, a good many of us, in manufacturing, now to go into farming? Contemplating these would-be farmers (I don't want to make fun of them) it may be said that in their minds agriculture is the most popular diversion in the minds of the American public today. These agriculturists point with pride to their exemplification of Dean Swift's aphorism of making two blades of grass grow where one grew before—and they are able to do it because they have means to procure fertilizers of the right quality and quantity.

A more numerous and more to-be-pitied class is found in persons of various professions and occupations who aspire to become farmers. Story papers print fascinating articles about the down-and-out man who, having failed in his professions in the city, sets forth with a brave wife by his side and finds a deserted cottage on an abandoned farm which is bought for a song. There, under God's clear sky, surrounded by heavenly ozone, cultivating a sun-kissed hillside slope, the couple plant a new Eden and live happily forevermore. It is an alluring bit of fiction—but it is fiction and the facts are found to be far otherwise by those who try the change.

Few of these adventurers into the primitive art of husbandry really do set a hen upon an eggplant in order to secure an eventual broiler; few purchase a cocoanut in order to supply material for making a cup of cocoa; few still purchase a book on pharmacy as a guide to successful farming—these be stories emanating from the seat of the scornful. But many unsuccessful ventures, loss of capital and blasted hopes must follow in the wake of this movement to rehabilitate the farm.

Land companies put forth attractive advertisements as sails in the favoring breeze. One is now appearing which portrays a heart-sick and despondent workman gazing from the reeking air of a tenement

window, with an arm supporting a sick wife and child and letting his tired eyes rest upon a mirage in the distance. In this mirage arises the ideal country cottage, with brilliant roses clambering over the walls, and well kept flower-beds dotting the closely-shorn lawn, while at the door stands Annie in a simple Marshall Field creation with little Lord Fauntleroy at her side to welcome her hero returning in his Sunday clothes from his daily task in the fields. Below is the mischief-making legend, "Why die in the city when you can live in the country?"

If farming is so easy, how mistaken must be those who would apply science to the art. May not our colonist fathers have been within the bounds of truth when, in describing the fertility of the soil, they averred that it was only necessary to tickle the soil to have it laugh the crops up into your face.

The restless toiler and the discontented urban dweller are met on all sides by opportunity to become scientific farmers. Correspondence schools if sufficiently urged will supply the means. One advertisement displayed this line in prominent type: "Learn to raise ducks by correspondence!" However, it is probable that those who enroll and pay the prescribed fee will find the duck not so closely related to the art epistolary as this juxtaposition would indicate.

I have already spoken of the competition between Engineering and Agriculture, the latter after nearly fifty years of comparative inactivity seems to be attaining the prominence and serving the purpose the founders hoped for it. Formerly there was but one course offered, known as plain "Agriculture," and it was presumably the recourse of those who were unable scholastically to complete the engineering or the general courses. Indeed, due allowance was made in the entrance examination for the poorly qualified agricultural students.

Conditions are now changed. Entrance to the agricultural courses is as severe as to the other courses of the college, and the curriculum is as stiff. No longer is the "Short Ag" or the "Long Ag," for that matter made the butt of ridicule. "Clod hopper" has disappeared from the college vocabulary. It is sufficient to note that of the two hundred boys from the City of Philadelphia now attending the State College of Pennsylvania, the majority are enrolled in the School of Agriculture. Perhaps on the principle of exchanging known for unknown hardships, the farmer's son desires to become an engineer or a chemist, while the banker's lad and the merchant's boy wish to be a farmer.

Agricultural courses have multiplied in the resulting differentiation. A student no longer pursues a plain agricultural course but may specialize in Forestry, Agronomy, Animal Husbandry, Dairy Husbandry, Poultry, Commercial Gardening, Fruit Growing, Landscape Gardening or Farm Management. The old professorships of Ancient Languages, English, Mathematics and the like are replaced by chairs of Pomology, Dendrology, Rural Sociology, Clericulture, Thremmatology, Ecology and Zootechnics. While salaries attached to the old style professorships remain generally stationary, compensation for these agricultural specialists has advanced in accord with the large demand and the limited supply. In the scale of salaries, the one begins where the other leaves off, that is, the highest professor-

ship in the Liberal Arts carries a salary about equal to the lowest professorship in Agriculture. Divergence between these salaries is further increased by the fact that instructors in the practical lines are in constant demand by commercial firms and by the Federal and State governments. Perhaps the government has been employing a large number of specialists in Greek, history or mathematics; but if so, the fact has escaped my attention. On the other hand, entire graduating classes in Agronomy, Forestry and the like are admitted to large stipends through the wide-open door of a Civil Service examination—wide open in the sense of a large demand and a limited supply.

Eventually this condition of affairs must change, for the supply will meet the demand through the large number of agricultural students enrolled and to be graduated. The output at present is nearly 10,000 annually and steadily increasing. It is to be noted that these 67 state colleges have property valued at 125 million dollars; that they have 7,342 teachers and enroll 92,000 students. To them the Federal Government gives outright 20 million dollars annually in addition to the original land grant of 18 million dollars. Their growth in appropriation, numbers and influence will be the marked feature when the educational history of the present era is written.

But not alone in intra-mural instruction is education meeting the demand for improved rural conditions. On a similar foundation of State and National support, 50 agricultural experiment stations are maintained at an annual cost of $3\frac{1}{2}$ million dollars, having 1,600 employes, and sending out 500 separate reports to over a million addresses. The scientific projects undertaken in these stations cover the entire field of husbandry and household economy. Some require years of patient investigation to bring dependable results. Plots of land have, in some stations, been under fixed experiments for thirty years. Some old and supposedly well-established principles of economics, the diminishing return of the soil, for example, have been refuted by results obtained in these stations. All this expenditure of time, money and energy has for its sole purpose the securing of improved methods and better results for the farmer.

In dwelling upon the magnitude of the sums expended upon agriculture both in the classroom and in the field, I am endeavoring not to criticise the action but to emphasize the importance of food production and to show the trend of the present movement. While it is unlikely that any material reduction in the cost of living will follow so long as the style of living remains unchanged; nor are we assured that the establishment of rural credit banks will prove a panacea for the financial burdens of the husbandman; nevertheless there are several results which may be expected to follow this revived interest in the art of agriculture.

The unintentional butchery of the soil, which has characterized much of our so-called farming, will be greatly reduced if not eliminated by the introduction of better methods. Unclaimed, unused and abandoned land will be brought under cultivation and will add to the sources of food. The New York State Bankers' Association claims that 10 million acres of land in that state alone could be added to the tillable tracts by redeeming highlands and swamps. Increased attention to agriculture will bring to bear the inventive genius of man

upon the problems of production and will result in additional labor-saving machinery and devices.

As manufacturing plants are removed to the country and as population follows, the congested, food-consuming centers will diminish and the danger of food panics through war or pestilence will be reduced.

The conservation of our national resources, and of life, both animal and human, will be served by an awakened conscience, less wasteful methods, an environment more favorable to health and by protection against unscrupulous and dishonest manufacturers of food.

A rural environment will also conduce to a larger degree of public happiness, an enlarged appetite for the beautiful and a more joyful outlook on life.

The new education particularly belongs to democracy. The demand for agricultural instruction came from the people and not from the educated classes. It seeks to serve the people and it will be employed by the people.

The governmental aid has enlarged the powers and scope of government; has finally established the principle of Federal aid to higher education; and has renewed the allegiance of the people to their government through benefits conferred. The appropriations made by the states have likewise established the principle of state aid to higher education and research.

Thousands of young men, whether in the service of the nation, the state or the county, have received a new vision of public service; have enlarged their capacity for serving their fellow men along practical lines; and, by becoming a part of the governmental power, will help to breed a class of devoted and conscientious public servants such as England has long enjoyed.

The introduction of these scientific studies has liberalized the college curriculum and has opened new outlets for individual aptitude.

Above all, this renaissance of the art of Agriculture has stimulated research and investigation. It has called to its aid the discovered truths of chemistry, physics, entomology, and the like. It has vastly enriched and enlarged the capacity for human knowledge. And it has raised and will raise man nearer to the ultimate goal where the finite approximates the infinite through the great laws of human understanding. For "the truth shall make you free."

A Member: Will the State College take up extension work in all lines of Agriculture?

DR. SPARKS: May I call attention to a pamphlet issued two years ago, just at this time? We issued a pamphlet directed to the people of Pennsylvania, issued at least 100,000 copies and that circular showed all the different lines of agricultural extension that would be possible; showed how we demonstrated each one and made it feasible, and we took that before the Legislature of Pennsylvania two years ago, to try to get a special appropriation of \$100,000 to carry on, for the next two years, the work of extending this information; and what did we get? We got a hearing up there; we took down the best men we could get for that hearing; we took men who went there to testify what this extension work had done for them,

and we got, now without criticising, five men on the appropriation committee to listen to us, one left and then there were four, one went to sleep and then there were three—and that's what we got. So I answer that question by saying that I honestly believe that what they are doing in Wisconsin, what they are doing in Iowa, what they are doing in New York we can do in Pennsylvania, but we've got to have the money to do it. What did they do up in New York, gentlemen? They had a rally day at Albany and brought in, it is estimated 5,000 people, invaded the State Capitol that day like a vast army, and every man had pinned on him "Extension Work," and they got their \$150,000, and that's the way they got it. We can do every bit of this, but you can't make bricks without straw and you can't run the college and keep the promise we had to make two years ago, that if they'd pay off the \$200,000 debt, we'd keep the school out of debt. We have kept it out of debt, but look at the cost.

MR. DORSETT: I would like to ask with reference to the farm expert work, in your judgment, wouldn't it be better, in taking up that work, to have a man who is skilled in dairying and one who is skilled in horticulture and one who is skilled in poultry culture, and all the other branches, to get out to these farms rather than to undertake to send one man who takes up all those branches?

DR. SPARKS: Oh, undoubtedly, but how are you going to pay the money? It would be so much better if we could do that. I am sure that Mr. McDowell, who is in charge of the extension work, will agree with that, that it would be better if we could do it. I want him to answer that question, because he is a Pennsylvanian, born and bred and lived all his life in Pennsylvania and it would be better for him to answer it.

PROF. McDOWELL: Mr. Dorsett is on the right track, except for this one thing: he is right, and yet, in anything of the kind there should be a man on the ground who could give advice at the time advice is needed. There might be men located at a central point, at the college for instance, along these various lines of dairying, of horticulture or whatever it might be, there might be a man in a particular county of the state who needed to have advice within a short time: it might be that these men at the college were out in another part of the state and it would not be possible to reach them; as you know, there's often some matter that needs to be done and done quickly, and if one needs to know what to do, he needs to get in touch quick with the source of information; therefore I think it is desirable to have an individual in every county who is located in that community, who gets acquainted with the people and gets the confidence of the people, because no man can do satisfactory work unless he does have the confidence of the people with whom he is working, and the man who lives in the community, gets next to the people and does his work there, can secure that confidence.

Now, with regard to the other phase of the work, it is not possible to place a man in any community who is thoroughly trained along all of these lines; you could not expect any man to be an expert horticulturist, expert dairyman and an expert in animal husbandry;

he will have some knowledge of all these things and some training in all of them, but you couldn't expect any man to cover the whole field. It is true it is desirable to pick out a man who has special training along the line demanded or followed in that particular community, but at the same time there are other phases of agriculture carried on in all the counties and it is desirable to have a man who has a more or less general training. So much for the local work. Now comes in Mr. Dorsett's question: It is, in that connection, desirable and necessary to have a man or men who are specially trained in dairying, horticulture and animal husbandry and agronomy; then, if any question comes up that these local men are not familiar with, these specialists are available and can be called upon to furnish the particular information which may be needed. It is simply a part of an organization, and that organization can be made most efficient by starting at the ground and building from the ground up, using the local community men and then have these men specially trained along these lines that Mr. Dorsett suggested, who can be called in and consulted as advisors to help work out the proposition that the local man may not be able to handle himself.

The CHAIRMAN: Gentlemen, time is passing. Next in order is the election of officers to serve for the following year.

The following gentlemen were then nominated for vice-presidents: Mr. J. Aldus Herr, Mr. P. S. Fenstermaker, Mr. H. G. McGowan, Mr. S. S. Blyholder, Mr. D. S. Taylor, Mr. C. H. DeWitt, and Mr. A. J. Kahler.

By request of the Chairman the Secretary appointed tellers, Dr. Beck and Mr. Hutchison, and the ballot resulted in the election as vice-presidents of Messrs. Herr, McGowan and Blyholder. On motion, the election was made unanimous.

The SECRETARY: I have no doubt that you have noticed that the Secretary is very busy during the time occupied by our meetings, especially when we meet in Harrisburg. I must keep tab on what is going on up at the Department office, so that I must get in there very early, in order to answer correspondence that needs prompt attention; then I must get down here, and very often it happens that just at the time when I ought to be taking note of something, some one comes and speaks to me about some matter, and I really need an assistant. Now, I don't want to minimize my work, every young man ought to be willing to give out as much labor as there is in him, and I am willing, but I really need an assistant Secretary. I don't want to make the motion myself. I had to call Brother Herr to the table this morning to help me. I will be very glad if someone will make a motion of that kind, that there be an assistant secretary and that he be elected at this time.

A motion in accordance with the foregoing suggestion was then made and adopted, and on motion of Mr. Joel A. Herr, Mr. R. J. Weld was elected assistant Secretary.

MR. WELD: Gentlemen, I thank you for the honor and will endeavor to do as much as I can to assist our worthy Secretary. It is a new position and the work is new. I hope we may work harmoniously for the uplift of the Agriculture of Pennsylvania.

The CHAIRMAN: Next in order is the election of the executive committee consisting of nine members.

The following gentlemen were nominated as members of the executive committee: Matthew Rodgers, A. J. Kahler, W. F. Beck, D. S. Taylor, M. M. Naginey, C. H. DeWitt, A. I. Weidner, F. D. Kerrick and J. Newton Glover.

MR. HUTCHISON: I move that the nominations close.

The motion was seconded and adopted.

MR. HUTCHISON: I move that the Secretary cast the ballot of the Board for the nominees.

The motion was seconded and adopted and the ballot cast in accordance therewith.

The CHAIRMAN: I declare the gentlemen elected whose names you heard the Secretary just read off. They will organize themselves and appoint their own chairman.

On motion the Board then adjourned.

WEDNESDAY AFTERNOON

The Board met, pursuant to adjournment, at 1:30 P. M. and a motion was adopted to proceed to the designation of a place for the Spring meeting of the Board.

The CHAIRMAN: The Chair is ready for nominations for a place for our Spring meeting.

MR. TAYLOR: I rise to present a place for the Spring meeting of this Board. I invite you to my county of Washington, to our county seat. We have all the necessary accommodations, we believe, there. We have a fine courthouse and a fine jail. We will not occupy the jail, we hope, but we have a fine courthouse for the accommodation of all. Our hotel accommodations are sufficient, if not we have plenty of good private houses, farmers who have moved into the town and would be willing to take us in and entertain us. It is easy of access; we are about 25 miles west of Pittsburg, with the Pennsylvania and B. & O. lines reaching there and a trolley from Pittsburg every hour of the day. We therefore respectfully invite you to come to Washington.

A Member: I would like to second that motion of Mr. Taylor's to go to Washington. I have been looking over the records and find that we have been going east several times. I don't think the members of this Board have had a chance to come over the mountain on the other side and see what we have there. We possibly can show you some things in the western part of the State different from some things we have in other parts of it.

MR. WESTLAKE: I rise to invite the State Board to hold its Spring meeting in Greensburg.

MR. SHOEMAKER: One year ago I presented the name of Greensburg for holding our Spring meeting, and at the same time, Mr. Wambold, in the eastern part of the State, suggested that Westmoreland county give way for holding the Spring meeting in the western part of the State. We have the hotel accomodations and a courthouse and everything else there.

MR. BRONG: Mr. Chairman, I have been a member of this Board for three years. The first year I was a member, the Spring meeting went to Butler, which is in the western end of the State. The second year, the Spring meeting went to Lancaster, in the extreme southern part, and the third year it went to Towanda, in the northern part of the State. At the meeting of the Board when that place was decided on, we also put in nomination the county seat of our county, but made no effort to get the meeting because we considered that Towanda had a previous claim, having been an applicant for the meeting before. Monroe county has several features of particular attraction which I want to call to your attention which will or ought to appeal to every American citizen as an educational feature. We have the Delaware Water Gap on our southern border, through which half of the members of this Board would pass, and if you haven't seen that natural curiosity, you have missed something that hundreds of people from the Old World are traveling yearly to see. Just below that point there was also, at the time of its completion, the largest concrete structure in the world—it may still be the largest to-day—which is also a matter of interest. I suppose with the completion of the Panama Canal it will not be the largest concrete structure in the world, but it was at the time it was built. I refer to the B., L. & W. bridge across the Delaware River. The county is a noted summer resort, as you know, and the western end of the county is a famous farming section, untarnished up to this time by boarding people, summer resort industries, as the eastern part of the county is. We have ample hotel accomodations for this body and we should like to entertain you at that place, Stroudsburg, the county seat of Monroe county.

The CHAIRMAN: Are there any other nominations?

A Member: Mr. Chairman, I feel that I ought to second the invitation of the gentleman from Monroe county, for the reason that I was born there and what the brother says is true, and there's no

doubt but what we would have a nice time and be entertained very nicely, for they have accomodations there in the hotels that are unsurpassed.

MR. JOEL A. HERR: Brother Killam says it's too close to Pike.

The CHAIRMAN: Are there any other nominations?

MR. HUTCHISON: I move that the nominations close.

The motion was seconded and adopted.

The CHAIRMAN: The Secretary will call the roll by counties.

The roll was then called, resulting in the selection of Washington, which, on motion of Mr. Brong, was made unanimous.

MR. TAYLOR: I thank the Convention for their selection and we will try to entertain you to the best of our ability, in Washington county.

A Member: I want to give you fair warning, Mr. Chairman, that next year I shall vote for Monroe county if I am alive and here. It's an elegant place. The brother has told us all about it. The accommodations are fine; the locality is good, the farms are good and they are a good people. I hated to vote against my brother here, but I felt that Washington ought to have it.

MR. HUTCHISON: This morning I heard something about people absenting themselves from the meetings. It is customary to ask to be excused when you are absent; to set a precedent of that kind, I will ask to be excused this afternoon to read a paper before the Milk Dealers' Association.

The CHAIRMAN: I notice at the head of our program this afternoon is the appointment of the Committee on Resolutions. I understand that the Chair has that appointment to make. If I am wrong, I will ask to be corrected in reference to that.

(On investigation, it was found that this was a matter in the hands of the Executive Committee of the Board.)

The CHAIRMAN: The Chair was informed that Dr. Frear was to appear before us this afternoon, but I don't see his name on the program for this afternoon.

The SECRETARY: Dr. Frear was unable to be here at the time when his name appeared on the original program, and by an arrangement with myself, he was called this afternoon instead of the Microscopist, at the point marked "a" on the program. I am sorry I failed to mention that to the Chairman.

PROFESSOR KELLOGG: That is perfectly agreeable to me. I will let Dr. Frear have the floor now or will read my paper whichever you wish.

The CHAIRMAN: We will then be pleased to hear from Dr. Frear of State College at the present time, and have Prof. Menges later.

The SECRETARY: Before the Doctor begins his report, I would like to ask who the teacher of Botany is at State College?

DR. FREAR: Our Professor of Botany has died recently and I don't know that an appointment has been made in his place. We have a number of junior instructors in the College.

Dr. Frear addressed the Board as follows:

LOW PRICED VERSUS HIGH PRICED FERTILIZERS

By DR. WILLIAM FREAR, *Chemist*

It has not been so many years since too large a fraction of the buyers of commercial fertilizers thought of them and bought them under the name of "phosphate," a word that, to those buyers, had only this very vague meaning—a plant food containing a substance made artificially, and varying in some vague and not at all well understood manner. But the study given to this subject by the farm buyer has made the number who think of commercial fertilizers in that very vague way, happily a very much smaller number. I don't know whether or not you have looked at the bargain store crowds in the cities. I suppose the gentlemen at least have noted the windows of this city and other cities where beautiful pieces of clothing are marked, "Price cut from \$28.00 to \$14.00." If you have, you have seen and possibly felt how desirable it is to get something for nothing; and while we recognize that that is very hard to do directly there are very few of us who have not at some time in our lives, tried to do it indirectly. And so we must not be surprised if we find a great many others influenced somehow by that desire. If you will study the number of brands of fertilizers that are sold at a high price and the number that are sold at a low price, taking only those of the same class, for example the plain phosphate or dissolved South Carolina rock goods for one class, the rock and potash goods for another class, a class made simply by mixing the dissolved rock with the potash salt, and for a third class, what we call the complete fertilizer, which contains also some nitrogenous material or other, you will perceive that there's a very large number of low priced brands which also are not rich in the more expensive of these ingredients.

Now the question I want to discuss with you this afternoon is not what is the agricultural value of the high priced versus the low priced material, and it is not can anybody get anything at all in the way of economic return from the purchase of a low priced material; and it certainly is not this one, had I better put on a large application or a small application for my purposes? Because, with reference to the latter question, sometimes one answer would be cor-

rect and sometimes another. What I want to discuss with you this afternoon is this: What man is getting the greater fertilizer value for a dollar of expenditure, the man who buys the high priced goods or the man who buys the low priced goods? To answer this question, I have taken the result, the figures of our Spring fertilizer campaign for last year, 1912; I have used for classifying between high and low priced fertilizers the guarantees of composition given by the manufacturers.

There are two reasons for this; the first reason is that the figures are round figures and much more easily classified than the analytical figures which would differ by one, two, three, four or five hundredths above or below the guarantee. Another reason is that on the average taking a considerable number of brands into account, the variations of the average guarantee are very small and unimportant for the present purpose. Now I want to say first, with reference to the dissolved rock phosphates, there were analyzed during the season, 43 samples containing on the average 14.63 per cent. or units per ton of available phosphoric acid, and selling on the average at \$14.69 per ton, or almost exactly \$1.00 per unit. Of these samples, 34 were guaranteed to contain 14 per cent. of available phosphoric acid and sold, in different localities, at from \$12.50 to \$20.00 per ton, average \$14.58. Four brands guaranteed at 12 per cent. sold at an average of \$16.38, and three brands guaranteed to contain 16 per cent. at an average of \$15.12 per ton. The number of cases involved in the classes other than the 14 per cent. class, is too small for valuable discussion, although sufficient to warrant the suggestion that some buyers have much to learn.

Of rock and potash brands, 137 samples were analyzed, containing averages of 9.73 per cent. of available phosphoric acid and 4.38 per cent. of potash, and selling on the average at \$18.27 per ton. These figures were for the goods delivered, freight paid at the station where the delivery was made. They included not only all the costs of shipment but also the retail dealers' or agents' profits.

We may approximate the cost of the potash in these grades by deducting from the selling price, \$18.27, the value, under like conditions of sale, of the contained phosphoric acid at the rate of \$1.00 per unit, or a total of \$9.73, leaving a balance of \$8.54 to pay for the 87.6 pounds of potash present. This balance is equivalent to 9.74 cents per pound for the potash, an amount nearly two times greater than the cost of potash in the form of highgrade muriate when bought for cash, at the point of shipment and in considerable quantities.

With reference to the selling prices, I have this one word of caution; the selling price, as a matter of fact, is not absolutely determined by the manufacturer. The same brand sold last spring in different parts of the State at figures varying from \$5.00 to \$10.00 difference, and that difference was altogether out of proportion to the freight differences; it represented the first cost, plus the freight cost, plus what the retail seller thought he could get from his neighbors for the goods; so that, if you have only a couple of brands, I should not regard the figures as very trustworthy of the general average because the influence of the retail dealer's idea of the profits he could get from his neighbors, differs so much in different com-

munities. It is only where we have a large number of figures that I regard these data as strongly indicative of the selling price, although there are certain inconsistencies in the range of selling prices that should not be overlooked. There is just one other point with reference to selling prices; in nearly all cases, the selling prices that are given for each brand represent the selling prices at two or three quite distant and differently located places, so that, instead of having simply two figures, I have four to six selling prices for the various brands in different parts of the state represented in this average.

Classifying the rock and potash according to their richness in potash, the following table of compositions, selling prices and pound values for potash, computed by the method first described is obtained.

Number of brands in class.	Per cent. potash.	Per cent. available phosphoric acid.	Average selling price.	Units of fertilizer elements present.	Cost per pound of potash. Cents.
2	1.13	9.00	\$14.25	10.13	22.8
38	2.00	10.00	15.95	12.00	14.87
14	3.00	7.27	15.08	10.29	12.98
8	4.00	10.12	16.42	14.12	7.28
45	5.00	9.56	17.22	14.56	7.66
3	6.00	11.67	18.67	17.67	5.38
9	8.00	9.78	19.33	17.78	5.97
3	10.00	9.33	21.96	19.33	6.31

That is, if we regard the costs of available phosphoric acid as invariably \$1.00 per unit, or five cents per pound—the average retail cost in dissolved rock phosphate, the actual cost of the potash in the richer goods, ranging from 5 to 10 per cent. of potash was about 6 cents per pound, whereas in the 2 per cent. potash goods, its cost was nearly $2\frac{1}{2}$ times as great.

It must be admitted that it is not entirely logical to charge all the variations in cost observed to the differences in potash percentage. In the average of the 127 brands, 87.6 pounds of potash corresponding to 200 pounds of muriate appeared. Now, the phosphoric acid, 9.73 per cent. was a little less than that furnished by 5-7 of a ton of 14 per cent. dissolved rock; so that 2-7 of the handling, packing and freighting costs for a ton of this grade, were charged against the potash, whose salt weighed only 1-10 of a ton. As a matter of fact, the selling prices varied somewhat with the quantity of phosphoric acid present, and this quantity differed somewhat with the potash richness of the goods. In the brands guaranteed to contain five per cent. of the potash, the following sub-classes as to phosphoric acid richness are observed:

Number of brands.	Per cent. available P 205.	Average selling price.	Cost per pound of potash. Cents.
22	8	\$16.56	8.56
11	10	17.12	7.12
12	12	18.32	6.32

Let us adopt, therefore, a second mode of comparison, in which the ratio of the collective values of the available phosphoric acid and potash present, at jobbers' values of 3 cents per pound for the former and $4\frac{1}{4}$ cents per pound for the latter, to the actual average selling price, is the base:

Number of brands.	Potash per cent.	Available P 205. Per cent.	Jobbers' values.	Retail selling price.	Ratio.
2	1.13	9.00	\$6.36	\$14.25	2.24
38	2.00	10.00	7.70	15.95	2.07
14	3.00	7.29	6.92	15.08	2.18
8	4.00	10.12	9.47	16.42	1.73
45	5.00	9.56	9.99	17.22	1.72
3	6.00	11.67	12.10	18.67	1.54
9	8.00	9.78	12.67	19.33	1.53
3	10.00	9.33	14.10	21.96	1.56

This comparison shows that in the richer goods, containing 6 to 10 per cent. of potash, the retail price was about one-half greater than the jobbers' value; for the 4 to 5 per cent. goods, the retail price was about $\frac{3}{4}$ greater than the jobber's value; and for all classes of goods of lower potash content, the retail price was more than double the jobber's value. To obtain as much value for \$1.00 in 2 per cent. goods, as in 6 per cent. goods, the ton price of the former must be \$9.72, instead of \$14.87.

Let us apply the same methods of comparison to the so-called complete fertilizers which furnish nitrogen in addition to phosphoric acid and potash. Of these, 470 brands were analyzed. They contained on the average, 8.09 per cent. of available phosphoric acid, 5.34 per cent. of potash, and 1.56 per cent. of nitrogen, and sold at \$27.64 per ton, on the average.

For the first mode of comparison, let us adopt for phosphoric acid, the retail value of .00 per unit, as in the case of the rock and potash goods; and for the potash, a value of \$1.40 per unit, or 7 cents per pound. This is possibly a little low, but bears to the unit

value for the available phosphoric acid, the ratio shows between the jobbers' values for potash and available phosphoric acid respectively.

In the case of the average complete fertilizer, we should therefore deduct \$8.09 for the phosphoric acid and \$7.41 for the potash, leaving \$12.09 to pay for the 31 pounds of nitrogen present, or 39.0 cents per pound, double the jobber's value for nitrogen in good organic materials.

Classifying the complete fertilizers as in the case of the rock and potash goods, we have the following respective nitrogen costs for the several classes according to nitrogen richness:

Number of brands in class.	Nitrogen per cent.	Available P 205 per cent.	Potash per cent.	Average selling price.	Units of fertilizer elements present.	Cost per pound of nitrogen. Cents.
23	.41	7.74	2.13	\$17.66	10.28	92.1
145	.82	7.90	3.72	21.37	12.44	54.0
22	1.23	7.77	4.15	24.19	13.15	54.8
132	1.65	7.80	6.12	25.61	15.57	31.7
18	2.06	7.97	3.58	25.96	13.61	33.4
36	2.47	7.17	6.03	29.16	15.67	30.0
25	3.29	6.94	8.36	35.28	18.59	27.7
7	4.11	7.29	6.29	36.76	17.69	26.7

That is, according to this method of computation, the nitrogen in the richer fertilizer costs only one-half more than the jobber's value for nitrogen in high grade organic material, namely, 19 cents per pound; but in goods containing only 82. per cent of nitrogen, or 1 cent of ammonia, the cost was about three times the jobber's value.

Using the ratio between the jobber's value for all the valuable constituents and the retail selling price for the several classes of goods, we obtain the following comparison for the complete fertilizers:

Number of brands.	Nitrogen per cent.	Available P 205 per cent.	Potash per cent.	Jobber's values.	Retail selling price.	Ratio.
23	.41	7.74	2.13	\$1.00	\$17.66	2.15
145	.82	7.90	3.72	11.02	21.37	1.94
22	1.23	7.77	4.15	12.86	24.19	1.88
132	1.65	7.80	6.12	16.15	25.61	1.59
18	2.06	7.97	3.58	15.65	25.96	1.66
36	2.47	7.17	6.03	18.84	29.16	1.55
25	3.29	6.94	8.36	23.77	35.28	1.48
7	4.11	7.29	6.29	25.34	36.76	1.45

By this method, we find that the cost of the nitrogen rises rapidly with the decrease in the nitrogen richness, in those brands that contain less than 1.65 per cent. of nitrogen or 2 per cent. of ammonia. Of the 406 brands here described, 190 contained less than 1.65 per cent. of nitrogen. To obtain for \$100 the same values as are given in 4.11 per cent. goods, the 82. per cent. goods must be bought at \$15.98 instead of \$21.37 per ton; the .42 per cent. goods, at \$11.60 per ton instead of \$17.66.

To conclude, the man who buys fertilizers low in valuable elements, may profit by an increase in his crops, but he is certainly not getting his money's worth of fertilizer under present market conditions.

A Member: Why is the price so much higher in the so-called, cheap goods?

DR. FREAR: When a man thinks he is getting a thing cheap, he really pays a little more than it is worth—that's the psychological reason. The other reason is that it takes just as much labor traveling around to make the sales for one as the other, pretty near as much driving and talking; a man wants just about as much profit per ton; he wants to get it and evidently gets it; in the second place, in all these cases you have one ton of stuff to handle, to pack in packages and to ship.

A Member: That's filler?

DR. FREAR: Yes, by filler I mean added stuff, but the goods all have the same bulk and same weight to be handled. The same relation obtains in the case of complete fertilizers. I am not saying at all that there are not many cases where these cheaper goods will not supply all the nitrogen you may need for your purpose and you may make a money profit out of the crop; the question I am asking is this, are you buying the fertilizer elements you need in the most advantageous way, even where you are buying at retail?

A Member: I want to ask you why it happens that, in examining fertilizer sacks, the potash as named, say 2 per cent. potash equivalent to 4 per cent. of sulphate of potash, and your bulletin says, according to my examination, that there is very little sulphate of potash in use? Doesn't it nearly all come from muriate of potash, and why isn't it stated as on the sacks?

DR. FREAR: The answer is this: I cannot determine absolutely whether any sulphate of potash is present or not. Every complete fertilizer, every rock and potash fertilizer contains sulphate of something, but that may come from dissolved South Carolina rock instead of potash. What I do, as I stated in the first bulletin, is to determine the amount of chlorine present. Chlorine is the acid element with which potash is united in the muriate, and it is the quantity of chlorine that determines whether the fertilizer will or will not produce the disadvantageous results that, in a few cases, follow the extensively and continuous use of muriate of potash, and if

have no better way of reaching the result. I admit the method is not perfect. In adopting it, however, I am following the practice of practically all the leading experiment stations charged with fertilizer controlled work in the United States. We believe it is the safest method that can be devised and that it ought to be followed. When they say sulphate, equivalent to sulphate of potash, I don't believe if they got into the courts, they would swear that all the potash was present in the form of sulphate. They mean that 400 pounds of sulphate of potash contains 200 pounds of actual potash, that the potash present was actually put in the form of a sulphate. It may or may not have been so introduced.

The CHAIRMAN: If there is no objection, the paper will be entered on the minutes.

The SECRETARY: When we are at our homes, if we are living as we ought to with our neighbors, nothing gives us more pleasure than to have a neighbor drop in occasionally. We have the very great pleasure this afternoon of having one of our neighbors in whom we are much interested, with us. I refer to the Hon. A. P. Sandles, Secretary of Agriculture of the State of Ohio—the head of the Department of Agriculture of that great agricultural state. I know we have a full program this afternoon and that we expect to have the pleasure of hearing Mr. Sandles at the joint meeting this evening, but we want him to have the opportunity of looking straight into the faces of the members of the Pennsylvania State Board of Agriculture, and we want to have the privilege of feeling that, for a very short time, he is our own. The relations of the Department of Agriculture in Ohio and the Department in Pennsylvania have been very pleasant indeed, and it gives me very great pleasure to introduce Mr. Sandles, of the Department of Agriculture of Ohio.

MR. SANDLES: Mr. Secretary, Ladies and Gentlemen: I certainly am pleased to be here in Pennsylvania and have a neighborly visit with you. I am glad to come over here and meet your Secretary of Agriculture, whose name and fame has gone beyond the limits of the Keystone State. He is doing a good work for you and I take it for granted that you are helping him do his work. When your State makes an appropriation of a dollar to be used by him and yourselves, that dollar is sure to multiply itself from ten to twenty times; that dollar may turn up in one of your most distant counties in the form of a bigger yield of corn or better cabbage or better agriculture.

I am one who believes that agriculture is the cornerstone of prosperity. I am one who believes that we ought to spend a little more money encouraging the production of our food supply and a little less money perhaps for war purposes in time of peace. We are now spending about \$1400 a minute in the United States for militarism. Some time ago I made a little investigation and found that we were spending about one dollar for agricultural encouragement by the Government to about forty dollars for militarism; that's one dollar for feed and forty dollars for fight; that's too much difference, in my opinion, between the two; and about one dollar for education

purposes to about twenty-four dollars for militarism. That's one dollar for education and twenty-four dollars for bullets; that's one dollar to shoot brains in and twenty-four dollars to shoot brains out. In my opinion we ought to revise militarism downward a little bit, in Ohio, and revise agriculture and education up a little, and I want to congratulate you folks for taking your time coming here and giving consideration to matters that are of the greatest concern to your commonwealth.

I am glad to learn that your Department of Agriculture is a potent and effective force for the betterment of agriculture in this State. I hope that you will continue to join hands and co-operate with your Secretary and with all your agricultural activities in Pennsylvania. Over in Ohio we are getting very enthusiastic about "garden sass." You know garden sass and the barnyard are more essential to the welfare of the country than college diplomas and edged tools are, and that's a pretty strong statement, but whenever we have a nation that does not feed itself, we may have trouble, and those who own the land must feed all the people; those who own the farms must supply food for those who live in the city. When the farmer fails to supply the food, the hungry folk in the cities will make the farmer trouble—there's no getting away from it. A hungry man doesn't have any respect for law. The hungry man may be willing to join the mob, and mobs do violence, so I want to again commend you for the business you are in. I hope you will have the courage of your convictions to talk and argue and battle for better agriculture, so long as you have the power and the strength to do so. I hope you will familiarize yourselves with all the agricultural activities in Pennsylvania. I sometimes ask the question in Ohio, how many farmers in the audience can name all the activities along agricultural lines. I find many of them who are not familiar with all the different State Departments spending money for agriculture. It is the business of the farmer to find out all he can about his business, and I don't doubt but what Secretary Critchfield has given you that same advice.

I would just like to ask how many here buy fertilizers for their farms? How many here always consult the report of the Commissioner or his deputies upon the results of the chemists' analysis of fertilizers before they buy? How many do not? Honor bright, now. Well this is home like. The fertilizer business amounts to thousands of dollars, to millions of dollars. When you have a Department that is organized for the purpose of your protection and for the purpose of helping you, you should take advantage of it. You can get that information for nothing. How many here get the bulletins from the Department of Agriculture of Pennsylvania? Well, that's a pretty good showing. (Referring to the number of members who held up their hands.) Over in Ohio, we take everything we can get for nothing. Sometimes we have folks over there who start out in the nighttime and try that practice, but I am sure if you will investigate, you will find many of your farmers who are not familiar with what the state is doing to help them and I imagine that that's a part of your mission here today—to scatter the sunshine of information to the farmer, let him know what the state is doing. You can afford to support valiantly, courageously, your De-

partment of Agriculture, your Agricultural College and Experiment Station, and all of your organizations formed for the purpose of advancing and promoting better agriculture, better horticulture, better breeding of livestock. You will get a good interest on your investment when you do.

I have spoken here longer than I expected, but you have given good attention and I want to extend to you a welcome any time you can come to the old Buckeye State. Ohio and Pennsylvania have always been neighbors. Neither one ever tried to take their star off the flag, and I hope that our work will come closer in touch, one with the other, and if, at any time, you do come to Columbus, you are welcome to drop in at the Department of Agriculture, you can have the best chair we've got, you can spit on the floor and you can tell the Secretary to go to thunder if you want to.

The CHAIRMAN: We certainly thank the gentleman for his very nice address and also appreciate his invitation to come to Ohio. We will now proceed with the regular order of business. Next is the report of the Entomologist, Professor Franklin Menges, of York.

Professor Menges then read his paper as follows:

REPORT OF ENTOMOLOGIST

By PROF. FRANKLIN MENGES

Pennsylvania farmers consciously or unconsciously have, from the beginning of agriculture, in most sections of this State, been following a system of crop rotation, which, in most instances has not given the insect enemies of individual crops sufficient time to pass through all the stages of development until their food supply was removed and another crop put in its place. When damage from insects came to crops in this State they were enemies of crops removed or they transferred their depredations to the crops in rotation.

Wherever possible the grasses, such as corn, should follow clover, because the enemies of clover are so different in their food requirements that little damage can be done by them to the corn crops. Some farmers think they are plowing down a clover sod for corn after they have had a field in grass for two or three years, but usually it is a grass sod full of larva that can feed on corn as well as grass.

THE WHITE GRUB

The white grubs are among these larva. There are a number of these, but the likelihood is that the larva of the June bug is the most destructive in this State.

This larva lives on the roots of the grasses and weeds largely, but will when this food supply is removed, attack roots of cultivated crops. Well-nigh through the entire state, the corn was attacked by these larva during this season. In many places where a corn stalk was pulled up as many as three and four were attached to the

roots. The corn stalks soon began to look sickly and stopped growing usually did not produce an ear and very little fodder and in many instances even died. This grub does not thrive in clover sods, and by instinct, the female does not lay her eggs in the clover field, but rather in the timothy fields, and wherever these have been permitted to remain in timothy more than two years, the period for development was sufficiently long for these first larva to develop into the adult and deposit eggs, and two or three generations of these larva may, in this way, be developing in this sod field and any amount may be present to attack the corn in all stages of growth. The wire worm is another of the larva that damages the corn, when an old sod field has been plowed up.

There are two species of these hard shelled, sinners above all others, the one feeding on decayed wood, the other on the roots of plants. The latter is the one that concerns us. During May or June the eggs are laid in the grass lands or in weedy places such as fence rows. This egg hatches by July. The larva feeds on the roots of grasses, grows slowly, requiring from two to three years to complete this stage of development. In this insect again there may be the larva in all stages of development, in the spring plowed corn field as well as the full fledged insect ready to deposit eggs for a new brood.

THE CUT WORM

These worms are the larva of night-flying moths of which there are a considerable number. These female moths lay their eggs in grass lands or weedy fields or overgrown orchards, after mid-summer. The larva hatches late in summer or early fall and feed upon whatever juicy vegetation is in the field. They become about half grown before winter and hibernate among the roots upon which they had been feeding in the fall and expect to feed upon again during Spring. Some of them become climbers, and if no food to suit their taste is found in the soil and if apple or fruit trees are at hand, they climb these and cut off the leaves. The larva becomes fully grown the latter part of June or early July and changes to the pupae. The moth does not appear until the latter part of August or September when it proceeds to lay eggs for the cut worm of the coming season. All these larva depend largely for their food on plants similar to the corn plant and will as readily attack this plan as the grasses; therefore, if a succession of crops can be adopted that will eliminate their food supply, the white grub, the wire worm and the cut worm depredations will be eliminated.

As already intimated, the old grass field is the feeding ground or food supply, especially after this field has been in grass from two years up. It is not the intention to get the farmer to plow up a good sod field just to destroy the feeding and hibernating places of insects, but there is no better practice to maintain a supply of organic matter, and at the same time, an amount of fertility equal to that of plowing up a sod that will yield from two to three tons of hay to the acre. Because under such conditions the field contains a sod that will furnish an amount of organic matter and fertility that can produce a crop of corn. This is not only farming to prevent insect infestation and destruction, but it is good farm practice.

A sod that is known to be infested with these and other larva should be Fall plowed and the sod set on edge, not turned down flat because their hibernating places will be broken up and they will be largely unprotected and exposed to the rigors of the winter and a large number of them destroyed.

A splendid illustration of the destruction by Fall plowing of the cut worm came under my observation during the season of 1912. In one of the limestone sections of the State, a part of a heavy sod field was plowed late in the Fall, the remainder in the Spring. On that part of the field plowed in the Spring the cut worm completely destroyed the first planting of the corn and no start of corn could be gotten until the cut worm had passed the larva stage of its development, while from the part of the field plowed in the Fall the cut worm was absent and over thirty bushels of ear corn more to the acre was harvested from the part of the field not infested with the cut worm.

Sometimes Fall plowing is not so effective as it was in this case and it may become necessary to resort to poisoning which can be done by placing poisoned foods for the worms, such as small piles of green grasses saturated with poison along the rows of corn under which the cut worms will hide and upon which they will feed and be poisoned. All efforts at poisoning in cases such as the above become extremely dangerous and should be resorted to only in extreme cases.

The white grub and the wire worm occur only in older sods and sometimes in sods containing a large amount of humus and these should always be plowed in the fall.

THE CORN ROOT WORM

This root worm is a white larva about half an inch long and about the thickness of a pin. The worm develops from the egg of a beetle about twice the size of the head of a pin. The beetle lays the eggs for a future generation, sometime the latter part of August or the beginning of September, near the roots of the corn stalk. The larva do not hatch from this egg until the following June or July. As soon as they come from the egg they enter the roots of the corn stalk and begin burrowing under the outside cover of the roots and at once stunt the growth of the stalk. Sometime the latter part of July or in August the larva enters the pupa stage and soon comes out a full fledged bug and feeds on the silk of the corn stalk and the latter part of August again lays eggs. From the life history of this insect it is evident that its depredations are possible only where corn is followed by corn, therefore, whenever a corn field is known to be infested, sow or plant the field with a crop entirely different from corn. Crop rotation has saved the Pennsylvania farmer millions of dollars from insect destruction alone. A system of crop rotation in which the following crop is so diametrically different from the preceding one, as the clovers are from the grasses, will purify a soil of both insect infestation and fungus diseases in a very large degree.

The CHAIRMAN: Gentlemen, you have heard the report, what action will you take?

It was moved and carried that the report be received and placed on file.

The CHAIRMAN: If the Executive Committee is ready to report, we will next have their report.

REPORT OF EXECUTIVE COMMITTEE

MR. RODGERS: The Executive Committee reports the following:

ADVISORY COMMITTEE

Dr. W. Frank Beck,	Altoona
F. D. Kerrick,	Towanda
J. Newton Glover,	Vicksburg
M. M. Naginey,	Milroy
P. S. Fenstermaker,	Allentown
Jocl A. Herr,	Millhall
F. S. Brong,	Saylorsburg
W. F. Holtzer,	Greensburg

CONSULTING SPECIALISTS

Botanist,	
Pomologist,	Chester J. Tyson,Floradale
Chemist,	Dr. Wm. Frear,State College
Veterinary Surgeon,	Dr. C. J. Marshall,.....Harrisburg
Sanitarian,	Dr. W. Frank Beck,Altoona
Microscopist and Hygienist, .	Prof. J. W. Kellogg,Harrisburg
Entomologist,	Prof. Franklin Menges,York
Ornithologist,	Prof. H. A. Surface,Harrisburg
Meteorologist,	E. R. Demain,Harrisburg
Mineralogist,	Dr. Isaac A. Harvey,Lock Haven
Apiarist,	H. C. Klinger,Liverpool
Economic Geologist,	Baird Halberstadt,Pottsville
Agricultural Geologist,	W. H. Stout,Pinegrove
Forests and Forestry,	Robert Conklin,Harrisburg
Feeding Stuffs,	G. G. Hutchison,Warrior's Mark

LEGISLATIVE COMMITTEE

I. A. Eschbach,	Milton
A. J. Kahler,	Hughesville
H. C. Snavely,	Cleona
Hon. H. G. McGowan,	Geiger's Mills
Matthew Rodgers,	Mexico

CEREALS AND CEREAL CROPS

B. Frank Wambold,	Sellersville
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ROADS AND ROAD LAWS

Calvin H. DeWitt,	Mansfield
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FRUIT AND FRUIT CULTURE

A. I. Weidner,	Arendtsville
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DAIRY AND DAIRY PRODUCTS

W. E. Perham,	Pleasant Mount
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FERTILIZER

John H. Schultz, Norristown

WOOL AND TEXTILE FIBERS

Sylvester Shaffer, New Castle

LIVESTOCK

Dr. M. W. Conard, Westgrove

POULTRY

W. Theo. Wittman, Allentown

MR. RODGERS: The Botanist we left to be filled by the Advisory Committee.

The CHAIRMAN: Gentlemen, you have heard the report of the Committee. What action will you take?

On motion of Mr. Joel A. Herr, the report was accepted as read.

The CHAIRMAN: Next is the report of the Ornithologist, Prof. H. A. Surface, of Harrisburg.

Prof. Surface then read the report as follows:

REPORT OF THE ORNITHOLOGIST

By PROF. H. A. SURFACE

It annually becomes the duty of the Ornithologist to present a report for the consideration of this Board, and we take pleasure in doing so, as follows:

Bird study and bird protection are among the subjects attracting the attention of thinking men and women all over the country, regardless of their vocations. The National Audubon Society, composed of thousands of members, the American Ornithological Union, the various State Audubon Societies and Bird Clubs all attest a general interest in this subject.

Birds justify close study by mankind. Their beauty of plumage and song is enough to attract our attention and justify our efforts to preserve them. From a scientific standpoint, they present, in their structures, various modifications that are truly wonderful. They are Nature's most remarkable flying machines. Their internal structures and external coverings adapt them admirably as the original inhabitants of the air, and make them fit objects of emulation by mankind in his aerial exploits.

From another viewpoint, they are worthy of the attention of students. They are manufacturers of no mean ability. Who among us would be content to be obliged to use a few sticks and straws, mud, hair, leaves, or fibres from some plant to construct a house in which to protect ourselves and our young during sun and rain, and storm and calm?

The next is the birds' own habitation, and apparently the outcome of its own thought and effort. It is at liberty to refuse or choose certain nesting materials, and build the nest in accordance with what the psychologist might call its own "conceptions." As the house is some index of the occupant, so is the nest some index of the bird. Thus, we see the slovenly built nest of the English sparrow, at once indicating the filthy and careless habits of these happy-go-lucky immigrants. Again, the neat and carefully made cup-shaped nest of the vireo, attached to a twig by its rim, is in keeping with the trimness and neatness in appearance and delicacy of note of this interesting and valuable bird. Again, the airy, cool and well ventilated nest of the turtle dove or mourning dove is in keeping with the light and loose feathering of this bird, and indicates its Southern origin; while the warm, moss-covered and snugly lined nest of the wood pewee or bridge pewee at once indicates that this particular species of bird very evidently inherits its nest-building tendencies from an ancestry, which, together with the wild goose and duck and the Water Ouzel of the Far West, lived northward, and doubtless reared its young to the music of a thousand rills rushing from the crevices of the Great Glacier, under the shadow of which it lived and among the crevasses of which it doubtless flew.

As agricultural people and as farmers, we come in closer contact with Nature in her various forms than do people in other professions. Is it to *us* that "She speaks a visible language?" Are we of the kind of whom it was said,

"A primrose by the river's brim,
A yellow primrose was to him,
And it was nothing more;"

or do we appreciate our opportunities to come into contact with Nature and learn that the God in Nature's plan of being is the God of man, deriving such lessons as the poet who exclaimed,

"Flower in the crannied wall, I pluck you out of the crannies
And hold you here in my hand, little flower,
If I could know what you are, root and all, and all in all,
I would know what God and Man is."

Aside from the educational, aesthetic and moral influence of birds, they justify our most careful study from an economic standpoint. Even the man who has no finer sentiments is generally sensitive in the financial nerve, which ends in his pocketbook. There can be no possible doubt of the fact that the cost of the production of crops is increasing. The farmers are too often and too absurdly accused of responsibility for the so-called high cost of living (which, by the way, for most persons might better be called "the cost of high living.")

Old pests remain with us and new ones appear. As the wild plants become less, and as cultivation of but a few kinds of crops continues, pests of these crops multiply. They take their toll first, even before the crop ripens. They are often responsible for the reduction of more than fifty per cent of its possible yield. It is true that by the spray pump and other temporary palliatives we can hold them in

check, but these must be constantly applied factors. It becomes more and more necessary for us to make a study of the preservation of the natural enemies of insect pests. When Nature was apparently better balanced than at present, we heard less of the destruction of property through these causes. Now, that the enemies of insects are greatly reduced, we must hear more and more of this drain of at least thirty millions of dollars annually from the pockets of the tillers of soil in this State.

Among the enemies of insects that are conspicuous for efficiency are such creatures as toads, frogs, salamanders, turtles, serpents, skunks, moles, chipmunks, and birds of various kinds. A careful survey of your farm and woodland made now and compared with such a survey as could have been made twenty years ago would show that more than fifty per cent. of the birds, in actual numbers, have disappeared during the two decades. As a matter of fact, the actual records of scientific investigators, such as those published by the able Doctor William T. Hornaday, the Director of the New York Zoological Park, give proof to this statement.

It is for us to study the causes of the decrease of these natural enemies of injurious insects. We have time to look briefly at the subject of the decrease of our birds. It must be remembered that these are decreasing not only in numbers of individuals, but in numbers of species which formerly were represented in our avian fauna. We should take warning from the fact that history repeats itself. During the past century from the British Isles over twenty species of birds were completely exterminated. What a country this will be when from the old apple trees the twittering of the bluebird in spring and summer can no longer be heard!

The barn swallows of two species were once abundant, feeding upon insects flying in the air. Little did we then hear of the importance of suppressing the flies. Now the chief theme in sanitation is *the swatting of the house fly and the stable fly*. Certainly these were held in check by the barn swallows, which nested beneath the eaves and flew and circled and fed in such great numbers. Where are they now? What efforts have we made toward their preservation?

The old fashioned Purple Martin is another bird that once was common where efforts were made for its preservation. How many persons now know of colonies of birds in this State, and yet at Waynesburg, Pa., where my friend, Mr. J. Warren Jacobs, of that place, has made a special effort in constructing suitable abodes in sufficient numbers for them, these insectivorous birds have propagated, not by the scores, but by the hundreds. Mr. Jacobs has well published in some of his excellent pamphlets on the habits of the martins, that he finds quite perceptible results in the effects of these birds in pest suppression, as illustrated by the greater perfection of fruits produced near his Martin colonies.

Among the agencies contributing to the reduction of numbers of our birds are such as the following: The destruction of woodlands and bushy area, where they found both protection and food: cleaning up fences in the commendable efforts of farm cleaning, unfortunately, has driven many birds to other quarters. The failure to provide food plants for the birds in place of those which we have destroyed has also contributed toward their reduction.

In the efforts toward bird preservation, it would be of great value to plant certain shrubs, such as Juneberry, barberry, and trees like the hackberry and mulberry, and vines like the wild grape, and Virginia creeper and other native plants, that furnish food and protection for the birds.

The increase of the English sparrow is also assigned as one of the causes that reduces the number of native birds and drives them away from the neighborhood of buildings and towns.

The small birds, commonly known as migratory birds, are slaughtered without hindrance for food and sport in the Southern states. Dr. E. H. Forbush, State Ornithologist of the State of Massachusetts, has pointed out the fact that notwithstanding bird protection laws, our small birds are still killed by gunners for the mere testing skill in marksmanship, and that others, like robins, are shot merely for sport in the North as well as in the South. For this reason a Federal or National Bill is proposed to protect migratory birds, both in the North and South, and it is fully believed this will reduce to some extent the slaughter now prevailing, and help to preserve and increase our birds. Consequently, it should be supported by us for its probability in reducing the insect pests and foes of farm crops.

The English sparrow is increasing, and we recognize more and more the wisdom of the proposed Barnhart Bill of four years ago, to appropriate a small amount of money to investigate the habits of this bird and devise means of suppressing it. Along this line it can be said that one of the latest recommendations for English sparrow destruction is to soak oats in whiskey or grain alcohol, until softened, and scatter it (do not put it in piles) where the sparrows will feed upon it. It is said that the drunken birds can be gathered and mercifully killed, while, of course, no injury will come to fowls or other creatures.

We should be very watchful for the recurrence of adverse legislation, and although we have demonstrated again and again that the Bounty Law is a greater curse than a blessing, we should again be on guard at this season, lest some enthusiastic person should attempt to obtain a Bounty Law or place a bounty upon the hawks or owls that are so essential in holding in check the very injurious forms of vermin commonly known as rats and mice. It is proposed to place on the permanently protected list in this State such birds as the killdeer, the turtle dove, and the blackbird. With this proposition we heartily concur, and recommend definite, favorable action by this Board. If we who are specially interested in our agricultural welfare do not move in this direction, whom do we expect to move for us?

Again the Gun License Law will appear for legislative consideration. This time it will not be pushed by the State Game Commission, but by rational citizens all over the State who agree that it is a very desirable plan. We have previously stated reasons for urging the Gun License Law, and after a most careful study and earnest investigation of the subject, noting how such law is working in other states, we again recommend a Gun License Law in Pennsylvania, which should provide that a farmer can hunt on his own premises without license, can shoot rabbits in his orchards whenever he believes them to be injurious, and can arrest trespassers without re-

quiring a warrant or the services of a constable or a justice of the peace, and require each gunner to carry a license giving his name, and show this upon request. Also, we hope to see a law providing that no person under sixteen years of age can legally touch a gun or other form of firearm in this country. Most accidents come from carelessness, especially on the part of persons too young to understand the dangers of playing with such weapons.

We recognize the fact that this report is not binding upon the members of this Board for action or concurrence with the views of your Ornithologist; but if, after a careful and earnest study of the subjects within his profession, he arrives at definite conclusions and conscientiously makes recommendations, is there not some considerable reason for concurrence with the same? The legislation along these lines is bound to come within the course of years. Why not be thoroughly progressive in every sense and have it now, rather than to wait until it is too late to be really helpful to our birds, ourselves and our children?

The CHAIRMAN: You have heard the report of the Ornithologist. If there is no objection it will be filed and published with the proceedings of the meetings. Next, will be the report of the Committee on Poultry, W. Theo. Wittman, of Allentown, Chairman.

Prof. Wittman then read the report as follows:

REPORT OF COMMITTEE ON POULTRY

By PROF. W. THEO. WITTMAN, *Allentown*

As Chairman of the Committee on Poultry I am particularly pleased to report to this body that the past year has been an exceedingly satisfactory one to the poultry interests of the State.

First: In enormous interest among all classes of people the last few years in everything pertaining to poultry has not only continued unabated, but, if anything, increased.

Second: There has been a great increase in the number of pure-bred poultry established on our farms this last year, due perhaps primarily to the starting up of so-called mammoth or day-old chick hatcheries in many sections, thus making it easy and cheap to start with a hundred or more pure-bred chicks. This replacing of the worthless, dunghill fowl by pure-breds is bound to enormously increase the egg and market yields of the poultry of this State.

Third: The last year has seen a crystallization of a sentiment that State College must have a suitable poultry equipment, suitably supported.

Fourth: The formation of a distinctive and independent State Poultry Society, having as one of its avowed purposes the establishment of a Division of Poultry Husbandry of the Department of Agriculture. Said Division of Poultry Husbandry to meet a popular and most emphatic demand for a poultry service, for all the people of the State.

Fifth: The tremendous value of the poultry crop, outranking most other crops of the State, deserve in both, this late and tardy

recognition and the item for poultry in the College budget and the independent Poultry Bill for the latter, both to be presented to the Legislature, the support of every member of the State Board of Agriculture.

The CHAIRMAN: You have heard the report of this Committee. If there are no objections, it will be filed and published with our proceedings. Now these different papers will be open for discussion and we will be glad to have them discussed pro and con by the different members of the Board. The first paper on the list this afternoon was the Report of the Entomologist, Prof. Menges, but any one of these topics brought before you are open for discussion. What is the matter gentlemen? I have seen more discussion than this in a good first-class literary society. These papers ought not to be left to go by default. If there isn't any discussion, we will proceed. Next will be an address by Prof. R. L. Watts, Acting Dean of the School of Agriculture, State College, Pennsylvania.

Prof. Watts spoke as follows:

ADDRESS

By PROF. R. L. WATTS, *State College, Pa.*

Ladies and Gentlemen, Members of the Board of Agriculture: I assure you that it is always a pleasure to come before this body of men who are interested in the development of Pennsylvania agriculture. It seems to me that the function of the Board of Agriculture and of the School of Agriculture of the Pennsylvania State College is one and the same thing, namely, to help the farmers of Pennsylvania to grow better crops, to grow crops at less cost, to put those crops on the market in the best condition at the lowest possible cost.

From the standpoint of the Commonwealth of Pennsylvania, the problem of the farmer is, how to feed our people in the country and in the city. The question that arises now is, Are we solving that problem? Are we doing what ought to be done in the solving of this problem? If you will station yourself along the trunk lines of important railroads entering Pennsylvania north, east, south and west, you will find that there are carloads and trainloads of produce sent into our State from the surrounding country to feed our people. Now, the question is whether we cannot produce much of that produce at home and enable our farmers to make a profit in the growing of these crops and serve the consumers of our cities better than is possible by bringing produce from the states all around us.

I shall discuss this problem this afternoon from the market gardener's standpoint, because that is my specialty. When I know that hundreds of thousands of carloads of cabbage come down from New York State to Pennsylvania, when I know that tremendous quantities of celery come from other states to Pennsylvania, when I know that tomatoes are hauled from New Jersey in enormous quantities and that they are brought up from Maryland in enormous quantities, it shows me the great possibilities right here in Pennsylvania for

enlarging our operations along the line of market gardening in Pennsylvania are not excelled—I don't believe they are equalled by any state in the Union. The fact is that Pennsylvania is producing enormous quantities of vegetables right now. We haven't widely known market gardening districts like some districts in other states; we all know of the Norfolk district, the most wonderful market gardening district in the world, and we have heard of the Long Island district, the Boston district and other districts of the United States that are famous, but we don't hear anything about the trucking districts of Pennsylvania. Why? Because there isn't any one prominent trucking district in Pennsylvania, perhaps, with the possible exception of the northern part of Philadelphia county. But what are we doing? Almost every farmer in Pennsylvania is growing vegetables. You take our cities, York, Reading, Johnstown, McKeesport—what is happening around these towns? Every morning, from early spring to late fall, you will find hundreds and hundreds of wagons leading into these towns, loaded with celery, cabbage, lettuce and all sorts of produce, so this business is of tremendous importance and it is up to the Board of Agriculture and the Agricultural Department of State College to get the information to these people to enable them to produce more successfully and economically; in other words, to feed our people more satisfactorily than they are doing at this time.

I had in mind something like this, that as a market gardener I would try to bring to you some thoughts regarding recent advancement in market gardening, some ideas that I believe the vegetable growers of Pennsylvania should have at this stage of the game, and I shall first start out with the question of lime.

This is an old question. There is no question discussed at the Farmers' Institutes of Pennsylvania that has a better hearing than the question of lime; there is no question discussed at the Pennsylvania State College that draws such a large audience as lime; but I am not going to discuss it from the standpoint of the general farmer. As general farmers we have learned that it is necessary to use lime to correct soil acidity so as to grow clover and alfalfa and other crops, and that it improves the physical quality of those soils and releases plant food, enabling us to produce better crops, but it's none of these things I have in mind this afternoon when I shall speak of lime from the market gardener's standpoint. Norfolk, Va. has been using tremendous quantities of fertilizers for years. It is not uncommon for a gardener down there to apply two tons of fertilizer to the acre every year, to the same land. With that sort of thing, the acidity has increased in those soils and we may say that those gardeners using lime to correct the soil acidity, not because it is there naturally to a larger extent than in other soils, but because the enormous use of fertilizers has brought about an acid condition that almost prohibits the growing of clover, but the thought I want to bring out is not that. The excess of acid conditions down there has brought about a condition that causes a diseases called mal-nutrition disease, or perhaps we should not call this a disease; it causes mal-nutrition, as the scientists term it; that is, certain crops fail to thrive in that soil which is so acid; that is, garden crops such as cabbage, tomatoes, spinach and other crops fail to thrive in that soil that has become so acid.

There is a danger that we didn't realize two years ago; it is a danger to the Pennsylvania market gardener, because we market gardeners have learned that it often pays to apply enormous quantities of fertilizers. When I was on my own farm, I found that it paid me to apply not less than a ton of fertilizer every year, per acre, to a certain crop. I was not thinking about mal-nutrition when I put on that fertilizer, and the same thing is happening in greenhouses to-day. The market gardeners are using lime because it enables them to prevent this lack of nutrition of certain vegetables that the market gardener grows; so there is the danger, if you are going to use commercial fertilizers liberally, and I believe in the liberal use of fertilizer. If you are going to follow that practice, we must look out for the other side of the problem and use lime in connection with those fertilizers, in order to keep the soil sweet.

Then the question of soil poisons is coming up here. I was talking with a prominent market gardener today, a college trained man from Michigan, and he made this statement: "Do you know that you can't grow watermelon and radishes together?" I said I didn't know that. He said, "Did you ever try it?" I said "No." "Well then" he said, "I have; I have tried it over and over again; you can't get them to grow together, because one poisons the other; the radishes do all right; but they poison the melons." There is something else to keep in mind, that some way or other, lime, when applied, avoids that trouble, so there is another element that enters into the use of lime from the market gardener's standpoint. It is interesting to note, in this connection, that the greenhouse men, who are making perhaps a closer study of the details of production than any other class of men, from Boston clear to Chicago, have settled down to the idea of putting on a certain quantity of lime from year to year, because they have learned, not the science of the problem at all, because greenhouse soils have not been studied, but they have learned that for some reason or other, lime makes greenhouse crops more certain, and in all probability you will find that right there are the two underlying principles involved; they avoid mal-nutrition; these crops are grown on the same ground year after year, and they avoid toxic effects. So much for the lime problem. The man who is following intensive methods, growing the same crops year after year and using enormous quantities of fertilizers—the safe course for him to follow is to use lime and use it freely.

We have already said something about fertilizers. Let's take that up again. Do we know more about the proper use of fertilizers to-day than we did five years ago? Well I think we do. It's true there haven't been very many experiments conducted by our various stations for the benefit of the market gardeners regarding the use of fertilizers; but I believe that we do know more about their use. Experiments at State College, experiments in Ohio, experiments in Maryland and experiments at many other Experiment Stations indicate that all the important mineral fertilizer to use in the handling of our soils in Pennsylvania in Ohio and in other soils—the all important mineral element to use is phosphoric acid. That is a thought that I want to bring home today to you farmers; it is not a new thought. We have settled down to the idea that phosphoric acid is worth more than we thought it was in the growing of our vegetables.

I well remember when I was in college studying this problem, there was the lesson brought home, "You must use plenty of potash." We don't think so much about phosphoric acid as we do about the potash, but we are finding that things are being reversed. This is a local problem, and the market gardener uncertain what to use should get in touch with the chemist, the soil expert so that he may determine more definitely the needs of his soil. We don't know so much perhaps about the value of the mineral elements, but we know about the value of nitrogen in market gardening and a lot more than we knew some years ago. The fruit growers have learned that; on our farm where vegetables are growing, in most instances I believe that nitrogen is the limiting factor. You may have an abundant supply of the mineral element, but if you don't have an ample supply of nitrogen, your crop will not be satisfactory.

What form will you use? We spoke a little while ago about mal-nutrition being almost equivalent to soil acidity. That being the case, let us avoid acid fertilizers so far as possible, especially in those districts where lime is expensive. Therefore, we would not advise the use of sulphate of ammonia, and our experiments at State College show that to be a safe statement; but we would use nitrate of soda, and we will put nitrate of soda down first because it is the most valuable source of nitrogen to the market gardener. When applied, it is dissolved immediately and it is once available to the plant. As to the amount of nitrate of soda that can be used, that is a different question. I well realize the fact, and can say from experience, that when plowed down under a heavy sod in soil that is naturally good, that nitrate of soda does not seem to have any effect on any crop you may grow under those conditions; but where there is a shortage in nitrogen in the soil, there is no better fertilizer to use than nitrate of soda.

The nitrate of soda propaganda claim—and this is a rather startling statement to come from the firms or the interests that are advocating the use of nitrate of soda—the nitrate of soda propaganda says it is seldom that more than one hundred pounds of nitrate of soda can be used to advantage in one application. These men have made a close, scientific study of it. I know market gardeners who have applied as high as 900 pounds of nitrate of soda to the acre. I think it is very seldom that more than 200 pounds of nitrate of soda can be used to the acre, and the safer practice is to put on smaller quantities, 100 pounds, and more frequently. We have learned that nitrate of soda is a very powerful fertilizer and that there are dangers attending the use of nitrate of soda, and it is a good thing for a man to learn that; our students at State College have learned that. Last winter we had a number of boys in the greenhouse growing tomatoes and lettuce and different crops, and one day a boy slipped into the fertilizer department, where we had different boxes with different kinds of fertilizers. He had heard a lot about nitrate of soda being a good fertilizer, and he took a handful and scattered it round on some of his tomato plants. I didn't tell the boy that was too much to use. I wanted him to learn that for himself; I wanted every other boy in the greenhouse to learn that that was too much. He put it on and in just about two days those leaves began to curl and the plant was killed. That was a great object lesson for him.

Another boy last spring thought he would hurry his lettuce, so he brought out a quantity of nitrate of soda and scattered a liberal amount of it around each plant in the student garden. He learned his lesson, as did every other boy on the farm, and from experiences of that kind, we have formed the idea that nitrate of soda is a very dangerous fertilizer. A gun is a dangerous weapon, but sometimes can be used very effectively and with perfect safety, and I want to make this suggestion, which I think many of you don't need, but nitrate of soda may be used with perfect safety exactly as you'd sow clover seed. With many of our crops, cabbage for instance, you can step into a field of cabbage and measure your nitrates so that you will know how much you should have for an acre, say 100 or 200 pounds. Sow it as you would clover seed; you don't need to be afraid about your cabbage being burned, it won't hurt at all. The bean, although a legume, is often benefitted by nitrate of soda, and you can spread it so there will be no burning. You can do the same thing with all the crops, practically. You cannot apply it to lettuce, because the salt will settle down into the lettuce heads and burn the leaves, but this thing of creeping along the row and putting a little pinch of it around this plant and that plant and so on, won't do, for today we have drills that will distribute it rapidly, and the best plan is to open up a furrow alongside of your plant and distribute it with a machine, if you want to, and cover it over.

We have made advance in nitrate of soda. We market gardeners can't talk gardening very long without getting onto the humus question. It is more important today than ever before. Why do I say that? Because it is more difficult to maintain the supply of humus in market gardens today than ever before. Why is that true? Because the supply of manure in the cities is getting less and less. We don't have as much of it now as we had several years ago. I was very much interested in the discussion at the Grange conference day before yesterday about having a law that would give us a lower freight rate on manure. I don't think it matters very much, because, in the course of a few years, our cities won't have very much manure to send out to the truck farms, as the motor truck and the automobile is rapidly taking the place of the horse in the cities. Perhaps you don't believe that, but that is what we are coming to very rapidly, because the truckers, the market gardeners, are learning that they can take their produce to the market with automobile trucks at less cost than they can with horses, and the store people and merchants in the cities, everybody who must use vehicles of any kind, are learning they can buy motor truck and maintain it for a given period for less than they can buy a good team and wagon and maintain them. The number of horses kept in livery stables will get less and less every year, until the market gardener cannot get that manure at all. It means that market gardening or the raising of vegetables is going to be shoved back from the city further and further every year, because this manure is expensive to transport, and our market gardening will be carried on further away from the cities and we shall be forced to ring in another factor that I shall mention in a few minutes.

I don't believe that the market gardeners and truckers of Pennsylvania are using cover crops, green manures, to anything like the extent they should and could. If you step over to some of the New

Jersey districts, you will find farmers or truckers by the hundred who are maintaining the supply of humus in their soil by the use of cover crops and green manures, only. Take the Morristown district, where many gardeners start in with a crop of peas. They may not get more than \$50.00 an acre from the peas, but there is some profit in that and the vines are there. This plant is a legume and that soil is richer than it was before the peas were planted. So they sell the peas, plow the vines into the soil and the soil has been made better for the crops to follow. There's one point. Let's see what happens. Well, follow with beans, and there again we have a soil improvement crop and the soil is further improved. Then in the fall there's always a cover crop on the best farms, preferably crimson clover. I realize that in many sections of Pennsylvania we cannot grow crimson clover so successfully as in New Jersey, but you can grow rye, you can grow buckwheat, you can grow oats, you can grow a large number of cover crops that are valuable. I wish the farmers of Pennsylvania would try out vetch to a greater extent than we are doing. I believe that vetch is a great soil improvement crop and that our market gardeners should use it more. The man who is growing a crop and getting it into market by the middle of July has a splendid opportunity to start a crop of vetch that can be plowed into his soil next year, so by crowding our market operations further away from the city, we will have to grow fewer crops in the year and leave time to start a cover crop that can be plowed down and increase the supply of humus.

If manure is available, how much should you apply? That is a local question. How much is applied by the most progressive, the most successful gardeners of the country? I have referred a number of times before Pennsylvania audiences, to the operation of M. L. Rudinick, of Cleveland, Ohio, a man who stands very high as an intensive market gardener and green-house grower. Mr. Rudinick has been applying for many years 42 to 50 tons annually of manure to his land, in the green-house and outdoors. Now you might say that is applying excessive quantities of manure. I would not, for a moment, criticise Mr. Rudinick for using that quantity, or any other man, provided he is making a profit, as these men are, but it does seem like an excessive quantity of manure. These men, however, say that they must do it in order to realize large returns; but I want to tell you gentlemen that in ten years from now, or perhaps less, there will be very few men applying 40 or 50 tons of manure to the acre. Why? Because they won't have the manure, they can't get it. Well, what are they going to do with the problem? They will have to satisfy themselves by using 10 or 15 tons of manure per acre and then bring in irrigation.

Study the history of agriculture in European countries and see what has happened. Go over into old China, if you want to, and see what those Chinese farmers are doing, who knew more about producing large crops two thousand years ago than some of us do today. What are they doing and what have they been doing? They have been irrigating their land, and we are coming to it in the United States, although the United States is not much in need of irrigation, not as much as many parts of China; but with the splendid streams we have running all through Pennsylvania, with the chief lifting power we can utilize, often water power, there is no reason why irrigation should not be applied to a greater extent in Pennsylvania.

Irrigation will reduce the amount of manure necessary. I have heard a number of gardeners say recently that 25 tons of manure, with irrigation, is ordinarily worth as much as 40 or 50 without irrigation. In other words, irrigation makes crop production more certain; there will be few failures of crops, the crops will be larger, the quality better. It is a business proposition for the producers of Pennsylvania, the intensive producers, to pump water from our streams and ponds and use that water for irrigation.

Now perhaps you might want to know what system to use. We often hear of a system referred to as the Skinner system and I have often been criticised for mentioning it. They say why don't you call it the overhead system? And I say, "Do you know any overhead system that is as safe as the Skinner system?" And it just takes one question to corner them. We don't hesitate to refer to other things that are the best in their line and so I don't hesitate to refer to the Skinner system, because it is a wonderful system and has been adopted over large areas, in many states. There are many farmers who have fifteen or twenty acres under the Skinner system, and many of these men have said that five acres under irrigation is worth as much as ten or twelve acres without irrigation; so let us look into this question of irrigation, for the growing of vegetables is a business proposition.

Turn again to another problem. Let us see what has happened along the line of seeds. First, I will take up this question of varieties. I can say, as a market gardener, that there has been a tremendous advancement in varieties. When I began to grow tomatoes, I found that a large percentage were rough and ill shaped. We had to discard them. What has happened since then? We have very smooth varieties today, the Globe, Bonnie Bess and other varieties. There has been tremendous development in these varieties. How about sweet corn? When I was a boy, my mother used to tell about Stowe's Evergreen. I thought they couldn't get anything better than Stowe's Evergreen, and it is good corn, but with the new varieties brought out since, such as the Golden Bantam—Stowe's Evergreen won't compare with it. What does that mean? Larger consumption. If a family will buy a dozen of Stowe's Evergreen, they may eat them but will not be particularly hungry, perhaps for another dozen of Stowe's Evergreen; but let them get hold of a mess of Golden Bantam sweet corn, they will want it as long as they can get it.

We learned at the Pennsylvania State College that there is a tremendous difference in strains of the same variety. Mr. Myers, in charge of our experiments in vegetables, will speak on that phase of the question. I will merely mention one or two facts in that connection. We have been testing twenty-nine different strains of Jersey Wakefield cabbage, planted side by side in the same field under exactly the same conditions, and we find that the seed of the Jersey Wakefield from one house makes us a hundred dollars profit to the acre than the seed of the same variety from another house. That means that by buying the right kind of seed, you can increase your returns a hundred dollars to the acre. We have heard a whole lot in recent years about good corn and good potatoes, but not very much about good vegetables and potatoes being put to seed; and if we wake up to the importance of this problem, there are tremendous possibilities along that line. I wish every member here might hear Mr.

Bishop, the market gardener of Michigan, who knows plant breeding and has been able to develop seed on his farm that turn out such a perfect product that, when he goes to the market, the merchants don't say, "I'll go out and look over your potatoes or sweet corn or whatever you have," but he says they say, "How many baskets can you give me this morning and how much have you? What can I get?" There's an authentic case. Dr. Weber and Dean Beatty of Cornell, have been out to this farm where plant breeding has been going on for years, and know that what I am telling you is correct. It means that we must exercise greater care in procuring that seed.

I think in most instances it is impossible to buy as good seed as can be bred at home, if you know how to do it; and every intelligent farm boy, reading bulletins from the Department of Agriculture and the State Agricultural College, and good literature, should be able to make progress in the selection of seed of the various kinds of vegetables. Here is a vital problem we have overlooked. We think that if we can put on \$10.00 worth of fertilizer, that will give us an increase of \$25.00 or \$50.00 to the acre. That's worth while, but just think, men, you might be able to spend \$1.00 or \$2.00 more for seed, for an acre of cabbage, and that will be the means of increasing your return \$50.00 or \$75.00 or \$100.00. Let us use better seed.

MARKET PRODUCE.

In conclusion, I want to speak of the question of marketing our produce. I often said, when I was on my farm, that it was easy enough to grow big crops of cabbage and tomatoes but not so easy to sell them. I have always thought that the marketing end was the more difficult end, the end that required greater skill and I still believe that. Are we making advancement in the disposition of our products as market gardeners? I think we are, and I believe that still greater advancement will be made in the future.

Now I want to speak just a few moments about methods of distribution. Will the parcels post help us out? I have given considerable thought to this question lately. What will it do for us? Here are the principles in order to send vegetables by parcels post, they must have a high value in proportion to the weight of the vegetables shipped. We will never be able to do business in selling cabbage, potatoes or turnips or beets by parcels post; we will have to wait until we have the postal express, and the postal express will be a tremendous advantage to the market gardener; but you take the market gardeners up in McKean county or Potter county or some of the cooler counties of Pennsylvania—down in Harrisburg and Philadelphia and New York, it is impossible to get peas in any considerable quantity during mid-summer and you can get large prices for good peas during the hot weather, and there is an opportunity for men in that section to grow peas in mid-summer and send them by parcels post to consumers in New York who would be glad to get them. Out in Pittsburg, especially, the consumers are getting together and are ready to approach you as producers and see what can be sent to them by parcels post or other means. The other day a representative of a Pittsburg Association came to State College and begged those farmers that they would connect up with the Consumers' League at Pittsburg.

Let's get together. What is the use of sending this produce through a great long line of middle-men before it gets to the consumer's door? This is a wonderful possibility for the producers of Pennsylvania. Let us not forget the fact that if we expect to realize large profit, however, and conduct a permanent business, we must give the consumer *quality*. If the consumer is better satisfied with Golden Bantam sweet corn than he is with Stowe's Evergreen, give him Golden Bantam. Give him quality and he will eat more sweet corn, and the same applies to other vegetables. That is exceedingly important, that we do not fall down on the quality end of this proposition. If the consumer wants wrinkled peas, give him wrinkled peas; give him what he wants.

The CHAIRMAN: We certainly enjoyed the excellent talk of the Professor and appreciate very much what he has done for us and the information he has given us. We will now have another address by Dr. Charles E. North, of New York. Is the gentleman present?

MR. HUTCHISON: When I left the Milk Producers Association Dr. North was giving an illustrated lecture there.

(On inquiry it developed that Dr. North was not in the Hall.)

The CHAIRMAN: That is the end of the program, gentlemen. This evening there will be a joint session of the four Associations at 7.30, in the Chestnut Street Auditorium.

The Chairman then read the program for the evening meeting after which the Board adjourned.

Wednesday Evening.

JOINT MEETING OF THE BOARD OF AGRICULTURE, BREEDERS' ASSOCIATION, DAIRY UNION AND HORTICULTURAL ASSOCIATION

The joint session of the four Associations was called to order by Secretary Critchfield, in the Chestnut Street Auditorium at 7.30.

SECRETARY CRITCHFIELD: The meeting will please come to order. This is a joint session of the State Board of Agriculture, the State Livestock Breeders' Association, the State Horticultural Association and the State Dairy Union. Arrangements have been made between the officers of these several Associations to have the Governor of the Commonwealth, who is the President of the State Board of Agriculture, preside. I, therefore, have the pleasure of introducing the Governor of the Commonwealth, and as he comes up on the stage, I shall be glad to have all the officers of these different Associations also come up and take seats upon the rostrum.

Governor Tener then took the Chair, amidst applause, and said:

GOVERNOR TENER: Mr. Secretary, Ladies and Gentlemen: I presume nearly every one who is invited upon the stage here to address you, or seeks to do so, usually begins with the claim that he is a farmer or that he is a dairyman or that he is a stock breeder or something of that kind. But I want to state plainly that I am none of them, and little do I know, in a practical way, of your lives and your calling, and all that the meeting means to you, except this, that in the ramifications of the Government, I come in close touch with those who are at the head of our various Departments, having in charge all of those matters which today are given your special attention, in which you are helping others and in which the State is endeavoring to help you. In all these things, while I may not be practical in them, I have such knowledge as enables me to recognize the importance, the very great importance, of your work and the work the State is doing. And very often, in the State administration, in the various Departments, misunderstandings are had by those who do not know definitely, specifically, just what the State is doing, and in these days, when so much attention is given to the demagogue and when the yellow journals are being read and muckraking magazines are being read—and fortunately, that is becoming less and less every day and such magazines are going into the hands of the receiver and it is realized by thinking people that the yellow newspaper is simply educating the people not to believe in newspapers; and today, while we are looking up and looking forward as much as we ever did, we propose to keep our feet on the earth while we are doing it, and it is the aim and purpose of this administration, as it always has been the aim and purpose of those in authority in Pennsylvania, that we should progress along sane and safe lines and meet every expectation of a sensible, serious citizenship, that we should do those things which make for the general progress, the happiness, the contentment of our people, and not those things which seem popular in the impulse of today and only lead to discord and dissension and misunderstanding.

In the message which I recently sent to the General Assembly, I endeavored to follow those lines, especially with respect to recommendations for the benefit of the agriculturist, for the benefit of our great State College and for all those things which will be helpful and really helpful to the farmer. We don't propose, if I can use the influence of my office, to check, to retard, in any way, this really worthy progress, but I do propose to use my office to keep out and to check the growing desire among some people who wish to use it in order to forward and to gain power themselves, that the people of Pennsylvania will not be burdened and not be loaded with a load of fool nostrums.

And, now, I am for the moment the presiding officer here. I have not prepared a set or formal speech, nor do I propose to speak at length. I do want to say and want to reiterate that the State is alive to the questions which interest you, very much alive. I don't admit or concede to anyone here that they are the discoverers of the necessity of particular attention and real, tangible, efficient aid to the Agricultural Department of State College. I feel that I have recognized that just as quickly as any man or any woman present. It is a recorded fact that last year, at the last session of the Legislature, that splendid institution enjoyed a larger appropriation than ever before in the history of the institution, and that a larger sum was

appropriated for the Agricultural Department, and if I can have influence, a still larger sum and as much as can properly be spared from the ordinary revenue of the State, will go to that splendid institution and to that very popular department, the Agricultural Department of State College. (Applause.)

So in all these things, let us be practical, let us be sensible, let us keep our feet on the ground. When people make charges against the State, the administration, or against any of our institutions, any of our colleges, make them specify, and be sure you know that what you read in print and what people say, what goes from tongue to tongue, that it is the truth and be sure that it is the truth—be sure that it is and think, think for yourselves.

I now have the special pleasure, ladies and gentlemen, of presenting the Hon. W. E. Skinner, of the National Dairy Show, of Chicago, Ill.

A Member: Mr. Skinner was unable to make connection on his train from Ohio and cannot be here.

The CHAIRMAN: Was there any provision for anyone to take his place, Mr. Secretary?

The SECRETARY: No, sir.

A Member: I think that Mr. Bayard was to read the paper.

A Member: Let's not have a dead paper while we have a live man to talk to us. We've got the Governor on the platform and the first Governor Pennsylvania ever had, so far as I know, who is a good friend to agriculture, and it's an honor to have him here and we ought to give him three cheers. I suggest that you call on Mr. Sandles; he's a live man and a paper, you know, is a dead thing.

The CHAIRMAN: Some time ago this State and city were honored by a visit from Ohio of those splendid young men who were the prize winners in the Corn Growing Contest, and I am quite sure that the proposition to reward those boys in such a fitting manner came from the active brain of the Secretary of Agriculture of that great State. He was with them at that time and he is with us here tonight. and I am now going to call on Hon. A. P. Sandles, Secretary of Agriculture of Ohio, and ask him to tell us of the needs of a State Fair in Pennsylvania.

Mr. Sandles spoke as follows:

THE BENEFITS OF A STATE FAIR

By HON. A. P. SANDLES, *Secretary of Agriculture, Columbus, Ohio*

Governor Tener, Ladies and Gentlemen: How many here have lived on the farm? Hold up your hands. (Many persons in the audience did so.) There's a quorum present. How many have attended an old-fashioned spelling school and played needle's eye or some other

kissing game where you got the same result? (A number held up their hands.) How many ever attended an old-fashioned corn-husking bee, where the boys and girls husked corn together? How many know what it meant when you found a red ear of corn? (Many hands up.) How many of you had the courage to do what you ought to do when you found the red ear? How many of you, for fear you wouldn't find a red ear of corn, took one along with you? (One man held up his hand.) I wish you'd stand up; you are the only one in the audience that isn't lying about it. Stand up. My good friends, I wish there were more of those good old social times on the farm. They are becoming things of the past. As they go, the boys and the girls go to the city.

I am glad to be introduced at this meeting by your Governor. He's got the dirt religion from the bottom of both feet up, as far as he goes, and that's going some for him. When we had our party of 374 corn boys in your city, a month ago, the Governor addressed them in the hall of the House of Representatives. The boys said he made a good speech. We elected him for a second term as Governor. The boys are writing stories for their home newspapers all over Ohio and marking Governor Tener up 100 per cent. and putting a plus mark after it. I imagine that is what Pennsylvania will do if he gives the support to agriculture which it ought to have and which he has promised to do. Agricultural prosperity is the cornerstone of this country. Pennsylvania, great as she is, is not keeping step to the music of Twentieth Century progress when she fails to support a State Fair. The Chairman of your Finance Committee of the House of Representatives told me today that your State Budget amounted to more than fifty million dollars. No part of that sum is for a great exposition at which you could display the agricultural resources, the agricultural virtues of old Pennsylvania. Somebody ought to hang their heads in shame. I don't expect to get an invitation to come back here, so I am going to say what I please tonight. (Applause.)

President McKinley, in his last speech made upon the Buffalo Exposition Grounds, used this sentence and it is a strong one; he spoke advisedly, intelligently: "Fairs and expositions are the time-pieces which mark the progress of states and nations." He also said that every fair, great or small, has helped in some onward progress and that every contest brings out the best there is in man or beast. I don't know how much it would cost Pennsylvania to establish a State Fair, but you can better afford to have it than you can afford to do without it. The State Fair and the County Fair have been mighty factors in making the United States the great, strong, progressive nation that it is. Gibbon, the historian, said: "Agriculture is the foundation of Commerce." That's true. Out yonder on the farm where the farmer farms, down yonder in the mine where the miner mines, is where the roots of prosperity and commerce begin. In yonder building where wheat is turned to flour, hide to leather and ore to tempered steel, you find the boundary line between agriculture and all the other lines of human endeavor.

I have passed a card among you. I wish to call your attention to it. Take it home with you. I brought it here for this occasion. The State Fair is the battle of the breeds. If you had a great exposition it would not mean simply agricultural products, it would not mean

only the fruits and grains, but it would also mean a great show ring of splendid animals, each fit to be a king among its kind. It would be the cross-roads where all your people could come and see what Pennsylvania is doing. It would be the place where your own citizens could come and discover Pennsylvania's virtues. The battle of the breeds. Why, it's something imposing, something splendid, to see the great horses led into the show ring, the fine cattle, the splendid swine and the sheep. A first-class animal is seldom owned by a second-class man. Show me the animal that will score 90 points and I will show you a man who will score 90 and 100. The breeding of good livestock helps to exalt the standard of citizenship. Ohio is proud of her State Fair. We have a two million dollar plant and no citizen of Ohio would vote to strike it down or to do without it. It is the great annual reunion. It is well nigh the greatest livestock show and exposition in America. We gather together there, the splendid animals of all breeds, from half the states of the Union. Why should Ohio, with a Budget of less than twelve million dollars, outdo Pennsylvania, with a Budget four times as large? You can better afford to have it than you can to do without it. It is the season's finished story. After the hard work of the summer months, after the seed has been sown and the harvest gathered, there at the State Fair are displayed the products of toil and soil. It is a splendid exposition to which come our people from every nook and corner of the State. I am sure that if you had such an exposition in Pennsylvania, that your people would be loyal in every fiber of their being to that exposition.

I wish you could come to Ohio and stand in the centre of our great agricultural hall or in the centre of our great agricultural department, covering two acres of ground. You would have born in you the conviction that your own State ought to have something along those lines. It is the home of the top notcher. The fellow who goes to the State Fair with an animal, article or product, is usually a fellow who can swim up stream. As a rule, if he'd fall off the bridge and drown, you'd have to look up stream to find him.

A State Fair helps to breed a race of men and women with courage, with vigor, with energy. The spirit of contest is dominant in the American people. Pennsylvania ought to give its citizens a chance to compete in the great show ring of your State. You would find the influence of vigor, energy, and ambition reaching from centre to rim of the old Keystone State. "It is the upstairs of human endeavor." We like to shake hands with the man who gets upstairs in his business, the man who is not satisfied to be just a common farmer, but the man who wants to be a real farmer, a real breeder of splendid livestock.

The beauties and the glories of a great State Fair should not be denied the Keystone State. "It is the showcase of brain and brawn." Why should not Pennsylvania have a showcase where your citizens who have public spirit, who have skill, who have attained the art of manufacturing the finished product—why shouldn't they have an opportunity to display their wares and advertise them? When they are advertising their wares, they are advertising the good old State of William Penn. "It is the repository of finished products." It is the arena where Greek meets Greek"; a real contest, a real struggle,

a real fight; that's what makes us strong. "It is the acme of the newest and the best." "It is the cross-roads of well directed effort." "It is the home stretch of genius and invention."

We have in our State Fair almost forty acres of machinery. That in itself is a wonderful education. The farmers of Ohio make better wages coming to the Fair and seeing the newest and the best than they can possibly make by staying at home. The farmers of Ohio contend that they can better afford to attend that Fair than they can afford not to do so. It is a great educational institution. The newspapers of Ohio have said that the State Fair was a great educational institution, with more far-reaching effects than the Ohio State University. That is a strong statement. It shows the appreciation of our people toward their great exposition. "It is a convincing argument for higher ideals." When the farmer comes to the State Fair and sees the top-notch horses, cattle, sheep, swine and poultry, he has an ideal fixed in his mind and goes home and tries to reproduce, tries to attain that ideal. The State Fair is not only educational, but it is inspirational, and that is worth something.

Pennsylvania is behind the times when it comes to the State Fair business. "The State Fair is the high priest of civilization and Christian living." We have nothing upon our grounds that would cause any lady to blush in shame. It is a clean, moral exposition. We get only those features that have an educational value. Whatever entertainment features we have are worthy and not demoralizing. Our people pass resolutions of commendation in their Institutes, in Public Meetings, in their Granges. "It is the field upon which the victories of peace are won." Don't you know that men and women like a chance to score once in a while, to win a victory now and then. The struggles and the combats are intense. The fur often flies. When they come through, they are stronger, because they have learned that they didn't know it all. They have met competition from their own State or from other states and are benefited by it.

It is the struggle, it is the contest that makes us strong. Ohio has more than eight thousand owners of pure bred livestock. That is a splendid army. Almost as many as Washington had to defeat the British. We would not have had that many if we hadn't had the show ring. Ohio livestock is sent all over the world; it is in demand, and breeders and buyers come from the four corners of the earth to visit our exposition. They would do the same thing for Pennsylvania if you would give them the chance. The State owes it to your breeders to give that kind of an opportunity, that kind of an outlet, to the men who produce splendid animals. "It is the college and university of experience and experiment." There you see the products that have been worked out by experience and by experiment and you find out what can be accomplished by mixing brains with work, what can be accomplished by intelligent effort.

It pays to mix brains with sweat and dirt. Today farmers are realizing that it takes gray matter to get the best results on the farm, as well as to get results in other arts, sciences and professions. Your State Fair would make farming more nearly a science, and more of a business proposition than any other factor can do. Your Experiment Station and your College of Agriculture can make research and can teach, but it is the great exposition that shows the actual results from that teaching. It is the demonstration, it is the

proof for which the farmer is looking, and the State Fair furnishes that proof and that demonstration. "It is the guide-board pointing to better methods, better things." That sentence, I think, is worthy of your attention. "It is the guide board pointing to better methods and better things."

Have a great exposition in Pennsylvania and your people would come by thousands. They would see what others have done. They would go home and do likewise. Some of them would become ambitious to do better. You would plant a silent educational intent in the minds of your citizens that you cannot do without your State Fair. "It is the place to learn the joys of victory and the gloom of defeat." A great many people think they raise the best grain or the best fruit. Perhaps they can in their own community. Or they have the best animal in their own community. It does them a lot of good to go to a State Fair and come in competition with the world and have the conceit taken out of them. It will do them just as much good as it does a candidate, who thinks he knows it all and everybody is going to vote for him, to get licked once in a while.

A Member: Do you speak from experience there?

MR. SANDLES: Yes, sir. "It is the inner chamber of the temple of ambition and perseverance." "It is the pendulum which moves the hands on the clock of progress." Take these little cards home with you. On the back you will see comments that I believe ought to soak in. There is a financial side and an educational side to the question. I don't know how much it would cost to establish a State Fair in Pennsylvania. We are extravagant in a good many ways and don't get much return, oftentimes, from our extravagance. I have read of some sporting fellows, who took some chickens to an old building. They let them fight till one was dead. The purse was a thousand dollars. That's lots of money. Don't you know that boys and girls winning prizes at State Fairs, and men and women winning a prize at a State Fair, is worth a whole lot more than any cock fight? In a western city a black man and a white man stood up and fought a prize fight. They bruised and battered each other until the white man was down and out and bleeding. The purse was \$100,000! That's lots of money. A State Fair or any one of its departments would be worth more to the welfare of this nation than all the prize fights the world ever heard of. I want to say here, that every time a white man goes into the prize ring and fights a black man, I hope that the black man will lick him.

Our own State Fair in 1912 was more than self-sustaining. We turned \$28,000 into the State Treasury. The right kind of a State Fair in Pennsylvania will be more than self-sustaining. We cut out passes, dead beats and dead heads. Everybody from the Governor down pays to get in. The Experiment Station comes to the State Fair, with a great exhibit, showing its work, showing the results of its experience and its experiment. By doing this the State of Ohio has discovered the virtues of the Experiment Station. The Experiment Station has always done a wonderful work, but the people never found it out so generally as they have since it has been coming to the State Fair, where tens of thousands, yes, and more than a hundred thousand people can see it and study it. Farmers come with their

note-books; take own items, go home and use that information in their business. They make good wages by doing it. I believe the State of Pennsylvania, spending so much money for its Agricultural College and its Experiment Station, owes it to the citizens of the State to give them an opportunity to find out all they can about those institutions. Our College of Agriculture comes along and shows its work, and thousands of people come in touch with it that wouldn't otherwise learn about its work. We have been doing this four years. Since then the attendance at the Ohio Agricultural College has gone from 300 to 1,200.

The State Fair helped to tell the story of the great work done by the Agricultural College. Your Agricultural College and your Experiment Station in Pennsylvania are doing a splendid work, and you ought to do everything you can to let the people of the State have the benefit of it. The Ohio State Fair is giving encouragement and inspiration to the boys. Two years ago, I asked our Board to pay the expense of one boy from each county in Ohio to the State Fair. The Board did so. We had 88 boys. They came to Columbus. The State Guard furnished tents and cots. We had a camp on the grounds. That camp was just within the shadow of the old cabin in which General U. S. Grant was born. We brought it from the southern part of the State and placed it upon our fair grounds. Our Governor and the President of the United States came there, talked to the boys and shook hands with them. That means something. When we asked those boys how many had never been outside of their county before, a number held up their hands. We asked those boys how many had never been on a railroad train before. Some of them held up their hands.

You cannot imagine how much good this feature has done the State of Ohio. The boys are better boys, because they are trying to deserve a free trip to Ohio's great exposition, and the human nature in the boys in Pennsylvania is just the same. Won't you give them the chance? The boys had four hours' work each day. They bring overalls and work with a will; there is no loafing on the job. If you could see that bunch of farmer boys on the fair grounds, watching the livestock show—with their note-books, for one of the requirements is that they must use note-books and write a story of their trip. We offer a prize for the best story written. They watch the judges; they learn about the livestock; they go into the horticultural hall; they study there the reason why the judge placed the ribbon where he did. They are learning, they are taking the information back home. They are missionaries. They go into the agricultural hall; they find out why it was that this specimen of corn was awarded the prize. They are finding out. They are required to spend so much time in each department. When those boys go back home, write their story, and it is published in the newspaper, there is a great missionary work done that nothing else could do so well. We have those boys appear upon the programs of the Farmers' Institutes. They tell their story. Don't you know that a boy likes a chance to be recognized? A boy is anxious to win his little victory. Sometimes we get so busy that we forget we were once young and had our day dreams and our longings and our desires. The old State Fair reaches into the nooks and corners of Ohio, with its silent influence, giving the boys inspiration, making them love the old farm. It is worth while. It is worth all it costs to have a good State Fair. The manu-

facturers of the State come there and display their wares. I am sure they wouldn't object to the money taken from their State Treasury to build a great exposition. One firm, last year reported that they took \$110,000 worth of orders on the Ohio fair grounds. They can well afford to support and help maintain such an institution. Stockmen sell many animals at top-notch prices. The stockman and the farmer who comes and wins the prize upon his grain has no trouble in getting a good price for his corn or his wheat for seed. Every dollar that is spent to maintain a State Fair will multiply itself many times. We should not be stingy. Out in Chicago there is a sign: "Wanted a man with a wooden leg to mash potatoes in a restaurant." Cheap help was wanted. The cheapest proposition is not always the best. The State Fair is a good thing for your State. It will help your farming business. It will help your livestock breeding. It will help to furnish a market for your manufacturers. You ought to have it. The ladies should not be forgotten. The Woman's Building is one of the finest buildings, if not the finest, upon the grounds, and they come there by hundreds and they show the skill and the handiwork of their needle and of the artist's brush. My good friends, a good State Fair comes in touch with almost every phase of human life. It gives encouragement, it gives inspiration, and to win a prize and to win a premium means a whole lot to the individual.

Out of the boys free trip to the State Fair grew the notion of having a Boys' Corn Growing Contest. I want to tell you about that. That is something else that Pennsylvania ought to have. No boy can compete for the free trip to the State Fair unless he is entered in the Corn Growing or Wheat Growing Contest. When we came through Pennsylvania with our train, we were royally received at Pittsburg and at Harrisburg. Twelve hundred boys entered the contest last year. Twelve hundred boys were trying to learn how to farm better instead of trying to learn by windstorms; some by high water; some by hail storms; and some were discouraged by their own fathers; and some didn't have the grit within themselves to stay with it, but 510 of them finished the job and had the results of their efforts certified under oath by two reputable citizens. The ten year advantage corn production per acre in Ohio is 35 bushels. These 510 boys concentrated their effort by studying their soil, by learning how to farm, and they made an average of 85 bushels. One of your speakers, who addressed those boys in your Board of Trade Building in this city, made this remark in his sentence: "I like to talk to boys who are 50 bushels better than a man." Those boys remember that, and that sentence has swept over the State of Ohio, and it is smoking the old fellows out, making better farmers out of them. Fifty bushels better than a man, and the average age of the boys was only sixteen ears. The business men, the bankers, the merchants and the grain dealers, the manufacturers, all went down into their pockets when we asked them to, and we got \$15,000 in cash to pay the expenses of those boys on a trip to the National Capitol. Isn't that a splendid sign of the times, when business men or men in town and city will come from behind their counters and be sociable and shake hands with the country and with the farmer? We had less trouble in getting business men to put up cash than we had to get the farmer to put up the boy.

The indifference of the farmer toward his own interests sometimes is provoking and inexcusable. I imagine that one of the reasons you haven't got a State Fair in Pennsylvania can be blamed more upon the farmers than upon anybody else. We have a law in Ohio that permits a vote to be taken in each county as to whether or not we shall have a County Experiment Farm. It would be for the benefit of Mr. Farmer, but when the vote is taken, as a rule those in the city vote for it, and the farmer votes against it. Farmers, you shouldn't be "penny wise and pound foolish." You should do those things that ought to be done and be willing to pay for it. We had some fathers who were so stingy that they wouldn't permit their boys to go into the contest, saying that they couldn't spare him from farm work the six days while he took the trip to Washington, even though the business man was willing to pay the expenses of his son. There ought to be somebody in each community authorized to use an elm club once in a while on that kind of a fellow. But if you could have seen those boys on their train, you would have been satisfied and gratified and felt that it was worth all it cost. It was the biggest trainload of raw material that ever left the Buckeye State. It was like picking the boys up out of the corn fields and putting them down in fairy land. We had a splendid train of standard Pullman sleepers. When the youngsters got in there they actually had to pinch themselves to find out whether it was really so or all a dream. After a while they discovered the little electric button at the side of their seat, and then they had fun. They pushed that, and here came the colored man to wait on them. Think of it! A colored man to wait upon a farm boy! And they kept the black man busy; they worked him over time, and after while he wouldn't come. One boy said, as I was passing through the car: "Gee, but this is a great stunt for a farmer to push a button and then have a nigger wait on him."

It was worth all it cost to give the boys a little opportunity. Your State Fair would be an open door; it would be a golden opportunity, and its influences would be so great and so far-reaching that you could not measure them by the common yardstick. Some of these boys, when it came time to go to bed, wouldn't take chances on undressing; they were afraid if they got their clothes off on a train they'd never get them back on, and they crawled into their berths without undressing. They wouldn't risk their shoes outside, that the porter might shine them, but they tucked them away safely beneath their pillows, along with their pocketbooks and watches. They wouldn't take chances. They said that they didn't know that the train had an "upstairs" and they talked about sleeping on the "shelf," referring to the upper berth as the "attic" and the "garret." If you could have seen those 300 boys and their friends, standing in the East Room of the White House, form a semi-circle, the President of the United States coming out and shaking hands with them, you would have rejoiced. That was perhaps the high spot of our trip. When we got through I took occasion to remind the boys that it was the old farm back home in Ohio that had given them that pleasure and that honor. Down at Mount Vernon, standing on the doorstep and on the front porch, and in the front yard of George Washington's home, with the sun shining brightly on the old Potomac down in front of us, it was a beautiful and inspiring sight. Don't you know,

it means something to lots of boys to have their picture taken once in a while? Human nature is the same in all of us, and we had our pictures taken.

Right then and there I reminded them, that it was the old farm again that had given them that pleasure; that had brought that honor to them, and that they were standing upon one of the most historic spots on earth. When I asked the boys to give the old farm back home a vote of thanks, you ought to have seen the caps and hats come off, you ought to have heard the cheers that went up to the sky, and I am sure they went home with greater love for the old farm than they ever had before. We didn't forget father and mother. When I asked them to give father and mother back home a vote of thanks for what they had done, again the hats and caps came off, and again the cheers went up. We had them surrounded with good influences. They are back home today, studying agricultural books, and there are more homes in Ohio that have the agricultural text-books in them than there ever were before, because we are giving a little attention to the boys. Those boys are going to be at the State Fair next September fighting for premiums on corn. They are trying to learn to farm instead of trying to learn how to get off the farm, and the old State Fair is going to be a mighty engine for good to keep the boys on the farm and the girls also. The girls are entering the contests as well.

Let's take time, and let's go to the expense of doing the things that will reach to every nook and corner of the State, and help to lift old Pennsylvania up. It's a good investment. It doesn't pay to be stingy. I don't know whether you ever heard that stingy man who was awfully stingy. One day he swallowed a five dollar gold piece. A doctor and a stomach pump was hitched on to him. They pumped a long while, but he was so infernally stingy that thirty cents was all they could get out of him. In my home county, a man started out to run for office one time; he had always been stingy. He hadn't done anybody any good. He always wanted to be paid for everything he did; he was always leaning up against somebody or something, never willing to take hold and lift, and the story they told about him was that he was so stingy that when his wife went to the refrigerator at noon to get the butter out for dinner, he stood there and fanned the ice while she held the door open. Well, he didn't get elected. Just think it over and ask yourselves if old Pennsylvania, with all of her wonderful wealth and resources, cannot afford to have an exposition. Build up the right kind of an institution and it will be self-supporting. Perhaps you can turn money into the State Treasury. Boosting is spending a hundred cents and getting more than a dollar back. That's what a State Fair means to you. It is worth something to the State of Pennsylvania to give its citizens an opportunity to compete, to win the victories of peace. Yes, you can afford it.

I spoke here this afternoon just a few minutes. In the course of those remarks I reminded some of your citizens that we are spending lots of money for militarism in the United States today, lots of it—I think too much, and not enough for agriculture. Do you know that the cost of these two battleships Congress is asked to appropriate money for, would build a great Experiment Station; yes, would build two great Experiment Stations and buy two good farms of 640

acres each; not only in one State, but in every State in the Union, and I believe that the right kind of an Experiment Station and Agricultural College can shoot farther than a battleship can.

My good friends, do you know that we are spending 72 per cent. of Uncle Sam's money for militarism, in time of peace, and about one and four-fifths per cent. for agriculture? That's in the ration of about 1 to 40; that's \$1 for feed and \$40 for fight; yet we are all talking about the high cost of living. I would rather do the things that would increase production and decrease the cost of living, than to decrease production and increase the cost of living, as we have been doing. Seventy-two per cent. for war and 3 per cent for education; that's in the ration of 1 to 24. That's \$1.00 for brains and \$24 for bullets; that's \$1.00 to shoot brains in and \$24.00 to shoot brains out. We are doing a lot of things that will not bring us as many benefits as the encouragement of agriculture, as the building of great state expositions. Why shouldn't we be sensible? Why shouldn't we be on our own side? Theodore Roosevelt says that every man has a right to be on his own side; why shouldn't we? What it costs to fire one of those big guns at a target would pay the salary of three country school teachers a whole year. I believe that a good country school teacher can shoot about as far as some of those big guns can and reach the mark oftener. You can afford to have anything you want in Pennsylvania.

I have talked longer here than I expected. I believe if you establish a great exposition in Pennsylvania that agriculture will have a new birth here. I am glad to come among you and see the spirit that seems to enthuse you. I am glad to come here and shake hands with you and help to encourage you in your work. And by the way, the most of you take hold and shake hands as though you might be running for office. I like to shake hands with a person who takes hold as thought they meant it. I know then that they are not stuck up or think they are better than I am. My good friends, think this over; have a good, sensible talk with the members of your Legislature, and I believe they will respond to your wishes and your demands. I believe that your public men in Pennsylvania; I believe that every class of citizens is so much interested in agriculture and production of our food supply, that they will join hands with you farmers if you will just say you want Pennsylvania to have a great exposition. I am much obliged for your good attention. I hope, if you ever come over to Ohio, that you will be sociable and come up and visit the Department of Agriculture. God bless all of you and the Devil miss all of you.

The CHAIRMAN: I am very sure you all join me in extending to Mr. Sandles a vote of thanks, for his splendid, interesting and edifying address on the benefits of a State Fair. I am in hearty accord with every word he said and believe that now is the time Pennsylvania should have a State Fair.

But just a word in explanation of Pennsylvania's position and condition—an explanation and not an apology. In order that Mr. Sandles may not think too meanly of us, let me explain to him that we are today, and have been, giving to the county fairs, a thousand dollars each, per year. We have spent a great deal of our money along other lines and for other purposes necessary, purposes that we

thought more necessary than the building of State Fair buildings and the location and operation of a State Fair, in that we felt that Pennsylvania is committed to the charge of its indigents, its feeble-minded, its epileptics, its insane and its consumptive poor, and on these worthy causes have large amounts of our money been expended.

At the time I came into office, the great sanitorium at Mont Alto was not completed; neither was the Hospital for the Insane at Spring City, at Rittersville, nor the tuberculosis camp at Cresson, or the Hospital for the Criminal Insane at Farview. At this time all of these institutions are completed, and now I believe it is time to spend money on sane people. We have been spending it for the past two years on the insane; now let us spend it on the sane people. I am in hearty accord, as I say, with the proposition to establish a State Fair here in Pennsylvania, and any measure that has that object in view or any measure that proposes a State Fair will have my sanction, my approval.

The meeting now is open for discussion, I presume, on the subject which has been made the real text of the evening, "The State Fair," and Mr. Rodgers is to open the discussion.

Shortly after the conclusion of Governor Tener's remarks, Secretary Critchfield took the Chair.

MR. RODGERS: After hearing the able and eloquent address from our friend from Ohio, in regard to the State Fair, I, for one, would feel like saying "Amen," and moving an adjournment; but the subject has been brought up and I don't know why I have been placed on the program to open this discussion. It is rather embarrassing for an old farmer to get up and stand before a great audience like this, but I will try to make you hear what I have to say, and that will not be very much, I assure you.

I believe the reason I have been placed on th program is that I don't think there is a man in the house that has attended fairs longer than I have. In the early 50's I began to go to fairs, and continued going every year, with the exception of one year that the Government sent me down to Virginia, and I didn't have the chance to attend fairs; but I have noticed the fairs from the early 50's up to the present time, the growth of the fairs, not only of our county, but of other counties. I have been through a great many fairs in the country, even to St. Louis to that great Exposition. I don't mean the Exposition, but the regular fair that they held there; it was considered at one time the greatest fair held in the United States. I have never had the pleasure of being at the Ohio State Fair, but I hope that the time will come when I may be able to visit something of that kind. I know that there is no one who enjoys looking at the fine stock and the great horticultural and vegetable displays, as well as poultry and things of that kind more than I do. I have had the honor of being called on at different times to serve at judge of horticulture and poultry and stock and things of that description in fairs away from home, and it is a wonderful thing for me to think about the growth that has taken place in the fairs of the different counties of our State, even since the law was passed, that our Governor spoke of, giving a thousand dollars to every fair, if they spend that much for premiums, they don't pay anything for horse-racing, the State don't,

but if you spend a thousand dollars on premiums or more, you get a thousand dollars. If you only pay out two hundred dollars of five hundred dollars for your premiums, that is what you get, and I hear everybody say the State Fair is coming and we are sure it is coming, and one of the troubles will be, they say, that it may injure the local fairs—the county fairs. That is one thing I would like to have the last speaker explain to us, whether it has had any bad effect in regard to the county fairs in their State.

Another thing in regard to the money that will be expended on the State Fair. This may make a reduction in the money that is being appropriated in the county fairs all over the State. Those things will have some hindrance in regard to the feeling of the people of the Commonwealth in regard to the State Fair. Many years ago we had State Fairs in this State; but by bad management they went out of business and didn't seem to be a success. They know better now how to conduct them than they did then. I know all the fairs I have attended in the State have been conducted in a very satisfactory manner. I think none of them in late years have gone financially wrong. I know we have been wonderfully in debt in our fair in Juniata, sometimes as much as three thousand dollars, when we had to buy land and put up the fine buildings we've got there. I want to say that any of you who has not been to the fair in Juniata county has missed something. It has been said by men from different part of the State that it is one of the nicest grounds, naturally, they ever saw for a fair. Your worthy Secretary of Agriculture and some of the present members of the State, a good many of the men from the Capitol at Harrisburg, have been there, and they gave a united vote of thanks.

In regard to the fair in our county, I can remember when it was just a very small thing when first I began to go to the fair. And, as the speaker spoke in regard to the exhibitors at the fair, I agree with him perfectly that when a man begins to exhibit and gets knocked down in competition with somebody else, he gets up a stronger man and clinches his fist and goes to work and gets ready again. I have been an exhibitor since 1862, until the last ten years, and I nearly always exhibited and tried to carry away the most premiums of any man that exhibited, and I did so, too, and I was proud of it. And it makes any man feel good to go to the fair and compete with the fine stock, the fine grain and the apple show. I was in the apple business and I made wonderful displays of apples and everything of the kind. I was in it for the honor and for the money also. It was particularly the money that I was after. And I succeeded, too, but I see boys now, men who were little boys and asked me about this, that and the other. They are men now and competing for premiums and they are the men who have sent off and bought blooded stock and brought them into our county and selling their stock right there on the ground, and it is an advantage to them and they are increasing in wealth, in popularity and spirit and everything that tends to uplift a man and make him a better man. Anybody who will attend fairs and study and inform themselves in regard to the subject that are presented to you at a fair, can't help going home knowing more than they did when they went there.

I am glad to know of this Corn Contest that is being conducted by the boys of Ohio. I have friends in Ohio; I don't know whether any

of their boys were in the contest or not, but I have always been a friend of the boys and nothing did me more good than when I could help a boy out. I had many hired boys working for me and I tried to get them to understand that they had to be men, and as soon as you can get a boy to understand that, as these men of Ohio are instructing their boys how to be men, you give them higher ideals in life, and that is what we want to do with the boys and with ourselves. You must always look up. When you go away from home, get in with somebody who can teach you something; be somebody; try to be one of the best men in your own community and try to have the best exhibit that is brought to the fair, and if you don't get the first prize the first time, try again.

MR. SANDLES: I will just say a word in response to the gentleman's question, whether or not it will detract from the interest or attendance at the county fairs to have a State Fair. We have seventy-two county fairs in Ohio. You can write a letter to each and every one and they will tell you that the State Fair helps to arouse interest and adds to their attendance and to their exhibits more than anything else can. The county fair business in Ohio—these fairs have a good, strong organization and they are back of and connected with the Ohio State Fair. The State Fair helps the county fair; the county fair helps the State Fair. The exhibitor gets started at the county fair; he wins a little prize there; then he gets conceited and goes to the State Fair and there he gets unconceited lots of times. But the two go together hand in hand and you need have no fear along that line, and the stronger your county fair gets, the stronger your State Fair is sure to become.

Now I forgot to explain that I was invited over by Mr. Bayard, the Secretary of the Breeders' Association and Editor of the National Stockman and Farmer. He kept writing to me and he is such a persuasive chap and so persistent, that I think, even though he is bald-headed, he could still go out and sell a sure-cure hair restorer to every person he met. (Calls for Mr. Bayard.)

MR. BAYARD: Some of you people are not any too warm and I don't want to prolong your agony. I can't think of a fitting reply to the last speaker, except to say that you can't keep a good man from coming out at the top—just what he has been telling you all the evening. The Governor of Pennsylvania is not here and we can all say now just what we think of him. I honor the Governor of Pennsylvania for the stand he is taking in regard to agriculture. I honor him because he has got so much common sense, which is the most precious and valuable commodity on the face of God's earth; and I honor him, moreover, because he is such a loyal and sincere Pennsylvanian.

For the past ten years the people of the other sections of the earth have plastered the State of Pennsylvania with their advertisements of their agricultural advantages, plastered them all over the State. Special cars have stood on the sidings of every town of any importance in the State, filled with their products. They have advertised their agricultural products, which was entirely proper and which they had a right to do, and we haven't done a thing to counteract it, we haven't presented the merits of the agriculture of Pennsylvania to the people of Pennsylvania as we should have done and must do, if

we are going to prosper and develop and as other states have done. Last winter we had a show at Pittsburg. It was a stunner in more senses than one, but what do you think the people who came to that show said? The people came and saw the magnificent display of fruit we had there, and about half of them were not ready to believe it was Pennsylvania fruit! We have not been demonstrating to our people what we can do in our own State, and when they saw that great arena, three hundred feet long, I suppose, full of fine livestock, and every bit of that fruit and every bit of that livestock was from Pennsylvania, you couldn't make anybody around there believe they belonged to Pennsylvania! It was hard to make them believe that we had it.

What in the name of heaven is the sense of our allowing other people to come down here and take our men and take our money away and we sit here and not show the world what we can do or even what we have done? There is no sense in it at all. Last year, \$400,000 went out of the City of Pittsburg alone to another state for an orchard enterprise; \$200,000 or more went to the Northwest to an orchard enterprise which had been advertising their resources there—money that ought to have been invested in land in the State of Pennsylvania and which would have helped the price of every acre of land in Pennsylvania. The other day, the Dean of the College of Agriculture of West Virginia told me that the Secretary of the boosters organization told him that the exhibit he made at a certain exposition of the products of West Virginia, was going to bring three thousand farmers into West Virginia, that country of hills and minerals and oils and gas—maybe some of this was gas, I don't know. But it shows what can be done. We have been working for this State Fair for twelve years now, the Pennsylvania Livestock Breeders' Association. We are nearer to it than ever before. For Heaven's sake, let us not lie down at the present moment. Let us get busy, get ourselves together and every man and woman of us go and see our members of the Legislature and get them on to the job and have a great State exposition. Let's show the world what Pennsylvania agriculture is and what it means and let us not stand still and die. Let's get a move on like they have done in Ohio. Lots of you have been to these other fairs and every time anybody says, "Where is the Pennsylvania State Fair held?" you have to say, "It is held in the future," and that's all you can say. Now let's get busy.

The CHAIRMAN: There may be a little time yet to spend in discussion if anybody has anything to say. Let's be prompt.

(Dr. Gay was called for by someone in the audience.)

DR. GAY: I am on the program for the first thing in the morning and I prefer to give my time to someone else.

There being no further discussion, the meeting adjourned.

Thursday Morning, January 23, 1913, 9 A. M.

Vice-President S. S. Blyholder in the Chair.

The Chairman: We will now proceed with the regular order of

business. First, will be the report of the Mineralogist, Dr. Isaac A. Harvey, of Lock Haven, Pa. Dr. Harvey was detained on account of being subpoenaed to appear in the Lycoming County Court as a witness. He sent his report and we have the report here. What action will the body take?

MR. HUTCHISON: I move that it be received and published in the proceedings of the Board.

The motion was seconded and carried. The report is as follows:

REPORT OF MINERALOGIST

By DR. ISAAC A. HARVEY

In my report last year, as your Economic Geologist, I referred to an estimate I sent to the Philadelphia Press in 1906, of the amount of coal in the United States, as well as to my former estimate submitted to the State Board in my report of 1909; and recently looking through the report of the United States Geological Survey, for 1910, on "Mineral Resources," and which I had not seen before, therein are some figures, which, in comparison with my estimates are as follows:

Area of coal fields in United States, "something over 496,000 square miles," my figures in 1906 being 450,000 to 500,000; the latter being my maximum, while the estimate of the United States survey on that year was 270,000 square miles and I had no other data, save my own deductions and experience; and I was therefore very close to the estimate contained in "Mineral Resources" of four years later. This confirms my estimate of extent of coal fields. The total amount of coal in the United States is figured at 3,076,204,000,000 tons in the ground prior to any mining, and this original supply, less the entire amount mined till 1910, leaves, as the apparent supply remaining, 3,062,808,972,000 tons, or 99.6 per cent of the original supply; so that less than one-half of one per cent. has been used or mined out.

My estimate of six years ago, and four years prior to the United States Government estimate was 3,200,000,000,000 tons; and the United States survey verifies my deductions, certainly, within 5 per cent. My estimate of the amount of coal in Pennsylvania, 80,000,000,000 to 90,000,000,000 tons, is about 20 per cent less than the amount given by the United States survey in the same report, which is 109,174,000,000 tons; but my figures were reduced before my report was presented, by reason of some information I acquired, in effect, that a very considerable area of the Pittsburg Seam is too thin to be workable and, in fact, certain areas pinched out or faulted; and thus I made my figures less than 100,000,000,000 tons, which amount, or near it, was my first estimate. My figures were on the Bituminous coal alone.

I also indicated that Pennsylvania contains about one thirty-fifth of the entire amount of coal in the several states; but these figures would imply that we have about one-thirtieth of the coal in the United States.

The available supply of anthracite is 16,640,000,000 tons only estimated in this State; some small areas in Colorado and New Mexico not given in the figures.

North Dakota, being first, contains one-sixth of the whole amount, being close to half a trillion (499,994,000,000) tons; Wyoming, being second, with 423,939,000,000, and these two, with Montana and Colorado, contain half of all the coal in the United States. Of course, our State leads largely in annual product.

IRON ORE

I note, also, that Pennsylvania is eighth in production of iron ore, with 739,799 tons; being 1.30 per cent. of the out-put of the United States and six-seventh Magnetite,—the rest being Brown Ore, save 846 tons of Hematite. Value is \$911,847.

Minnesota is first, with 31,066,769 tons—all being Hematite (Red) and 56.64 per cent. of entire national production. Value is \$78,462,560. Michigan is second, with 13,303,906 tons of Red Hematite. Value is \$41,393,585.

The total value of all iron ores mined in 1910 was \$140,735,600 and Pennsylvania produced slightly less than 1,154 of the amount in value; and yet, our State far exceeds any other in its production of pig iron, steel and their several products; Ohio being second in value of its production.

CLAY PRODUCTS

In brick and tile values, Pennsylvania leads, with \$19,814,355; Ohio being second, with \$17,231,236; Illinois third with \$14,331,414; New York fourth, with \$9,778,288, and New Jersey fifth, with \$9,245,854; while Missouri, Indiana, Iowa and California are respectively in order as named in the value of their production.

In pottery Ohio leads with \$14,294,712; New Jersey second, with \$8,585,455; Pennsylvania third, with \$2,279,930, and New York fourth, with \$2,093,661; the other states being far behind in production and none reaching a million dollars in value.

It is noteworthy, that, while Pennsylvania exceeds Ohio nearly \$2,500,000 in value of brick and tile, the latter exceeds Pennsylvania slightly over \$12,000,000 in value of pottery; and that the total value of brick, tile and pottery in Ohio was \$31,525,948, while in Pennsylvania is was \$22,094,285—showing a margin in Ohio's favor of \$9,431,663.

There is a suggestion here that Pennsylvania should be able, with her vast clay resources, to come up to a parity with Ohio, in the total production of these clay products, by increasing her pottery output. Pennsylvania produced 12.99 per cent and Ohio 18.53 per cent. of the total clay products of the United States in 1910, and this margin could readily be overcome by more enterprise in the right direction, since we have all the resources needful and quite as available as Ohio.

Pennsylvania produced fully 35 per cent. of fire brick of the total output in all the states and about three and one-half times the amount produced in Ohio; thus in Pennsylvania the value was \$6,454,928; in Ohio, 1,709,039; Missouri coming in ahead of Ohio, as second, with 2,059,845; while New Jersey is fourth, with about \$1,000,000 of product in fire brick.

This industry is advancing rapidly in our State and just at this juncture, despite the uncertainties arising over a new administration, is showing an exceptional output, and nearly all the fire brick plants are running at their full capacity, by reason of the unusual demand for high grade fire brick for the iron and steel industry now flourishing in this and other states.

New York leads in production of common brick, with 1,380,084,000, in value \$6,897,438; Illinois being second, with 1,196,526,000, valued at \$6,896,836; Pennsylvania being third, with 828,703,000, valued at \$5,371,707; and it may be remarked here that these three states have produced common brick somewhat in proportion to their leading cities—New York, Chicago and Philadelphia.

Pennsylvania is woefully derelict in producing drain tile; since the product here was only \$11,480 in contrast to Iowa, with \$3,337,851; Indiana, with \$2,071,564; Illinois, with \$1,613,698, and Ohio, with \$1,869,823.

Thus, we have reason to bestir ourselves in this branch of clay production, and the material is abundant for drain tile and the profit so sure that we certainly may attain a better status in comparison with the states named, wherein the production is several hundred fold our own, and with no more favorable conditions. It seems to be merely neglect that explains the disparity in this respect.

In vitrified brick Pennsylvania stands third, with \$1,204,724; Ohio being first, with \$2,876,157; Illinois second, with \$1,415,355; and Kansas fourth, with \$1,089,798.

SEWER PIPE

To my mind, one very important and profitable industry and deserving far more attention and capital than it now receives, is the manufacture of sewer pipe; both by reason of its constant and increasing demand, as by the fact that this business is invariably profitable and affords a better margin than some others that seemingly promise more favorable results to those who do not understand this industry.

Ohio, with its sewer pipe value of \$3,289,587 in 1910, is by a good margin, easily foremost in this respect; Missouri being second, with \$1,210,348; California third, with \$1,031,061; West Virginia fourth, with \$817,080, and Pennsylvania fifth, with \$583,418. And yet we have as many facilities and as abundant sewer pipe clays as any of the other states exceeding our production; while the demand is quite as good as anywhere else and means of transportation rather superior by reason of the eastern cities where the demand oftentimes exceeds the supply that may be available.

Moreover, there is no very strict analysis or formula, as relates to the quality of clay or to its purity that might preclude many localities from venturing into this industry; for there are vast deposits of clay, apparently useless for firebrick or building or other clay products, which, nevertheless, may be well adapted to the making of good sewer pipe; and the varying grades of clay, from place to place, and differing markedly in analysis, as to the per cent. of the several elements as determined by the chemist.

Thus, good sewer pipe can be, and has been, made of clay with 15 to 20 per cent. of alumina and 65 or 70 (indeed 75) per cent. of allica,

as the one extreme, and, also, of clay containing as high as 30 or even 35 per cent of alumina and as low as 40 or 45 per cent. of silica, the alkalis and iron determining, in a sense, whether or not the clay will readily vitrify; and, of course, a certain definite per cent. of iron oxide is an advantage, needful to aid in the slight fusibility required to make the pipe impermiabie and tough, as well as an agency, which iron becomes, to produce the deep red of chocolate color, seemingly desired by the trade and preferred to pipe of light color.

Albeit, the element of iron does not blister the pipe when burnt in the kiln, as much as some dealers seem to think; for even as much as 4 per cent. of iron oxide, when inherent in the native clay, or even added and well ground to make a homogeneous material, does not appear on the surface or in any sense injure or detract from the quality of the pipe, as is supposed, and the admissible 3 or 4 per cent., oftentimes found in the refractory clay and which is made into firebrick for furnaces, will not appear in the blisters, but simply colors the brick in varying tints from a slight yellow to a buff or brown. In West Virginia, as elsewhere, in some instances, and when the clay seems defective in iron oxide, another quality of clay with more iron is added, to afford the needful element of iron, which aids well in what is termed vitrification, and in making the pipe stronger, more tensible and certainly more impervious; while the alkalis, so objectionable in refractory brick as tending to reduce the infusibility, aid in the vitrification of sewer pipe.

Some clays with less than the needful per cent. of alumina, which is the plastic or bonding or cementing element of clay, require a portion of clay with a greater per cent. of alumina to secure the needful plasticity and molding condition that assure a perfect bond and avoid the cracking which may ensue in pipe made of clay, containing, say, only 10 or 12 per cent, of alumina and an excess of silica (or sand), which, of course, would not admit of a perfect bond or plastic condition and produce cracks, either in drying or burning of the pipe; since an excess of silica will cause undue expansion and destroy the smoothness of the surface and measurably prevent the production of uniform pipe.

Yet the burning which, at its height, requires salt to unite with the free silica to glaze the pipe within and without, would not be satisfactory or successful, of the alumina were to exceed the silica or there be not sufficient free silica to unite with the salt, as thrown upon the fire, and produce a perfect glaze; producing silicate of sodium.

In a broad sense, there are many and various deposits of clay; from those found in swamps and fields and in many local beds, to the pure clays of the coal measures, that will make good sewer pipe, the composition being determined by analysis, and, if the clay be defective, the needful element, as may be ascertained by the analysis and by experiment in tests by burning, may be supplied from other sources.

I have in mind a certain sewer pipe plant, located in a coal field in proximity to coal seams, and the clay and coal together are taken from the same drift or mine, the coal being about four feet in thickness and its underlying, or floor clay, some six or eight feet thick; so that the two are mined and delivered at the plant on the mine cars and at the lowest possible cost.—the clay for the pipe and the coal for burning the same; and, as a result, the success of this operation and the splendid profit or margin in the sale of the pipe are assurance that any well ordered and carefully managed establishments of this kind will pay better than a coal mine in the same locality; and the

product produced at such a cost as will forbid or exclude much of the competition that otherwise might make the business uncertain and precarious.

This plant, as mentioned, was for several years at the mercy of the market and unable, in its initiative and beginning, to compete with the firms which had been in possession of the market and pre-empted, if you will, the best trade. And while, for a few years and without accurate experience or practice in these matters, the owners could not secure at once a favorable sale of their product, yet, in due time, the works paid expenses, despite the fierce opposition and efforts directed towards their undoing; and about the second or third year, paid the running expenses of the plant; the next year made a profit of some thousands, the next \$35,000, the next \$50,000, then \$90,000, and finally, a year showed the handsome margin of something like \$150,000 and the business has shown a very pleasing progress and dividends, surprising to the coal operators in that section, who cannot possibly show anything near the profit and dividend afforded by the sewer pipe works in their neighborhood.

Hence, the coal being in good shape and thickness, and its floor clay suitable for sewer pipe, the advantage of such a business is manifest and believable to those who investigate the same.

In fact, the mining is reduced to a minimum of cost, both of the clay and coal, and the obvious result is that no competition with any degree of success, can avail against such a business; leastwise, from and source which produces the pipe from clay obtained from one direction and coal from another. If a firm, buying its coal in market and shipping its clay from a deposit at a distance from the works, can survive even with a small profit or margin, what must be the possibilities of a sewer pipe plant which has its clay and coal right at hand and hauled in mine cars to the machines and without any intermediate handling or freightage or possible cost?

Such conditions are found many places in our State, and, with all of the advantages and facilities named; withal, the best of transportation and markets towards the east, why should not Pennsylvania surpass all the other states in her production of sewer pipe as she does in coal and many other clay products.

POTTERY

In the total value of pottery, including redware, stoneware, yellow and rockingham ware, semi-porcelain, china, bone, sanitary, porcelain electric, supplies, miscellaneous, etc., Ohio leads with \$14,294,712; New Jersey being second, with \$8,588,455; West Virginia is third, with \$2,675,588; Pennsylvania is fourth, with \$2,279,930, and New York fifth, with \$2,093,661; and so Ohio, with its 42.31 per cent. produced nearly seven times as much as Pennsylvania with 6.75 per cent. Ohio produced 60 to 65 per cent. of white ware and Pennsylvania, a mere trace of the same, and not enough to be in the list save in connection with the production of other states; that is, without separate figures.

In the clay of many kinds mined and sold in the United States, New Jersey leads, with \$657,805; Pennsylvania being second, with \$636,618; Missouri third, with \$509,433; the other being far behind.

Among the most inviting projects upon the basis of clay products,

is what might be termed buff and kindred building brick, made mostly from inferior fire clay or, indeed, the soft clays known as fireclay, and the many and various colors and shade sand tints, that may be produced from the native clay, alone, in its varied deposits, and also by the use of certain mineral pigments and oxides, afford opportunities for a wide range of experiment, whereby nearly every color and shade of paint may be replaced by or find a substitute in building brick. I have suggested to some makers the feasibility of extending their range of test and experiment, so as to compete with the paint manufacturers in placing on the market quite as many varieties of building brick, as respects colors and shades, as the paint makers may afford in their products; that is, if a building is to be erected of any color, such as may please the owner, building brick can be supplied which will be quite as acceptable and satisfactory and with no more, or even less, cost than the same could be finished with lumber and paint, and, of course, be more permanent.

In many ways, as intimated, Pennsylvania can vie with Ohio in the output and sale of the several clay products in which Ohio, as well, sometimes as other states, now excels us; and there is a wide range of possible advancement in this respect and promise of attaining the first place wherein we may now be in the second place or much lower.

OUR LAWS

I crave your indulgence for a brief reference again to our game laws, to which I called your attention in my report last year, and have since sought to know more thoroughly.

While I have seen some reports relative to the number of deer killed last November, and the claim that the number exceeded those killed in 1911, I am prepared to say, with all kindness and respect for those more directly concerned, that I cannot admit that there were as many deer killed in 1912 as in 1911; and the facts, as stated to me and published in some local newspapers, do not sustain such a claim; for there were not as many killed in Clinton or Centre, or Clearfield or Potter or any other adjacent county as far as the figures as certainable indicate.

In Clinton county there were over 1,000 hunters after deer, last year, as compared with 700 to 800 in 1911, and no one can produce figures that prove that over two-thirds, three-fourths as many were killed in 1912, as were killed in 1911; and the same scarcity of bucks was indicated in all the adjoining counties; the complaint being that many does were seen, but few bucks; and fawns were notably absent.

In saying this, I am free to admit that there were more pheasants, wild turkeys, rabbits, squirrels and other small game; but, at the same time, I do not hesitate to predict that next year the dearth of bucks will be more pronounced and, without some revision of the law or discontinuance of hunting the bucks will finally disappear altogether.

The CHAIRMAN: Next is the report of the Apiarist, Mr. H. C. Klinger, of Liverpool, Pa. Is Mr. Klinger present? He's not here—the weather is too wet for the bees.

The SECRETARY: I haven't seen Mr. Klinger at any time during our meetings.

The CHAIRMAN: Next, then, on the program, is the Report of the Committee on Dairy and Dairy Products; R. J. Weld, of Sugargrove, Pa., Chairman.

Mr. Weld then read the report which is as follows:

REPORT OF COMMITTEE ON DAIRY AND DAIRY PRODUCTS

By R. J. WELD, *Sugargrove, Pa.*

The year of 1912 was, in some respects, the most remarkable one in dairying that we have ever had. The prices for all classes of dairy stock and dairy products were the highest that your committee has ever known and the demand has been sharp. I have never known as great a demand for dairy stock, at as large prices, as exists today.

The high price of feeds has resulted in a weeding out of many of the unprofitable cows. In my own section, worn-out and poor cows have brought double the price for bologna that they did four or five years ago. While high grade promising stock commands good remunerative prices, still there is much room for more systematic and thorough weeding of, our dairy stock, and I firmly believe that no more profitable practice could be inaugurated in any dairy section than the systematic weeding of the dairy stock.

I note a disposition in all dairy sections of our State which it has been my pleasure to visit to place a good deal of reliance upon the percentage of butter fat, as shown by the Babcock test, as an index to the value of the cows as dairy animals. My own experience indicates that if a person is to use only one standard as a measure of the profitableness of their cows, the weight of the milk given during the year is a much safer standard to follow than the percentage of butter fat. In my own herd in 1912 the cow that gave me the greatest weight of milk gave me also the largest total, profit, made the largest returns for one dollar expended, and made butter fat and milk at the smallest price per pound and per 100 pounds respectively, while the cow with the highest average test only returned a total profit equal to the average of the herd, and occupies seventh place as a milker and fourth place as a producer of butter fat and fourth place in total profit.

Another means of herd improvement that is within the reach of every dairyman and which is as largely neglected as the determination of the production of each individual cow, is the more general use of pure blood dairy sires, who come from ancestors that are profitable producers.

Your Committee believes that the time is here when the provisions of the stallion law could wisely be extended to the breeding of dairy cattle. I believe that the future of our State in dairying will warrant the enactment of legislation looking toward the using of better animals for breeding purposes, and if our dairymen persist in using inferior and scrubby sires, they should be encouraged by the state to mend their ways.

As illustrative of the improvement in production of the dairy cow through the elimination of the poorest producers and the breeding to a pure blood dairy sire, I can cite to the members of the Board a dairy where the average production has been raised from 4399 pounds of milk and 194 pounds of butter fat to 7144 pounds of milk and 338 pounds of butter fat. In this herd last year, with the cost of roughage, including pasturage, was \$33 and the cost of grain \$43 per cow, or a total cost of feed of \$76, there was a total profit per cow of \$45, and \$1.56 was returned for every dollar expended for feed.

There are two difficulties in breeding that seem to be quite prevalent throughout the State; they are shy breeding of some of the best producers and abortion. I would recommend that our Board ask the State Livestock Sanitary Board to investigate these troubles and publish information that will help our dairymen to eliminate the losses from these two causes. My observation is that the latter is far more prevalent and disastrous, and that comparatively little is known of the very serious nature of this malady. In some instances where a dairyman has kept a good male for his own use and that of his neighbors, this disease has been introduced into his herd through the male, from animals of other men.

DAIRY PRODUCTS

The demand for dairy products was never better than it has been during the past year, and the prices paid for the same have been very satisfactory. At the creamery in my own town the patrons received an average .328 cents per pound for their butter fat. With the food cost of producing fat in our section at from 20 to 24 cents per pound, this leaves a fair margin of profit.

A matter of interest also is the increasing demand for the whole milk, either in its natural form or divided into several different products. New territory for milk for consumption as whole milk is being sought constantly, and the prices paid are usually attractive enough to secure the goods. This is having some effect upon the improving of the sanitary conditions surrounding the dairies because of the requirements of the milk dealers. When new dairy barns are being built, it is encouraging to note that more and more attention is being given to improved sanitary conditions. On the other hand, there are a large number of farms in Pennsylvania where the dairy barns are far from what they should be for the housing of so sensitive an animal as the dairy cow and the production of an article of food so susceptible of contamination as milk. I was recently in a stable where the cows are being kept which I should estimate was 30 by 40 feet, and the only means of lighting this basement outside of the doors was one manure hole and one 6 light, 8 x 10 window, and yet this farmer lives withing a few miles of one of the best markets in our State, and undoubtedly could secure more for his products than some of us who live 150 miles from the same market and are selling there at good prices, simply because we try to furnish good goods made under good conditions.

Your Committee wish to commend the work of the Director of Farmers' Institutes in his efforts to further the dairy interests of

the State by encouraging the dairymen to breed better dairy stock and produce better and larger amounts of these products.

The CHAIRMAN: Gentlemen you have heard this report, what will you do with it?

It was moved and carried that the report be accepted and placed on file.

The CHAIRMAN: We are now ready for discussion of the report.

A Member: There's one point Mr. Weld brought out in his report that I think it well taken; that is in regard to the loss to dairy farming from contagious abortion. I have spoken to our veterinarians, the last two or three we have had since I have been a member of the Board, asking them to give this matter special attention, because speaking for Union county, I think there is more loss from that from all other diseases combined, and I think there should be some prevention.

MR. J. ALDUS HERR: Having taken a pretty active part in the breeding of cattle in the last five or six years, I have listened with a good deal of interest to the report with reference to advising breeding up dairy herds and things of that kind. The advice is good, but haven't we plenty of other things that need equal attention? First, to cultivate the consumer's taste to know the difference between a medium article and a first class one. In our town of Lancaster, there are probably more than 100 dairymen selling at anywhere from 6 to 8 cents, and there is as much difference between the two, so to speak, as between iron and gold. Yet the consumer knows nothing or practically very little about the difference of the quality of what he is buying. There isn't any way or any sure way, to get a good first class article by those who are willing to pay for that article; and one of the chief objections—and it has forced a revolution upon the people of Lancaster county that they positively will resent and are resenting, and that is the system of dairy inspection in that county. Right around me, having access to the Lancaster market, within a radius of 3 miles, within the last two years, twelve of our best dairymen have gone out of the dairy business and into the beef business because people will not pay sufficient for the article they receive according to the amount it costs to produce it. I've seen it time and again. My neighbors say that they positively will not produce milk—and there's plenty of it sold in Lancaster at our caramel factories and places of that kind, and sometimes it doesn't net them over three cents a quart, and we have a report from the New York experiment station where it costs four cents to produce it, and the dealers are forced out of business, and we of Lancaster I believe will return to the feeding of beef cattle in preference to producing milk at a loss.

A Member: The great fight that is coming in my locality, and I find it in Blair county, is between the consumer and the dealer. I looked up some statistics last year and found that in the city of

Altoona, which has a population a little bit larger than Harrisburg, I found 180 farms selling milk in Altoona, and there were 100 dealers—think of it, 180 farmers and 100 milk dealers in Altoona! What is the result? There is continual strife and the farmer is getting a little better than three cents a quart for his milk, he who produces all the energy in that milk, raises his calves and cows and feeds them and takes the milk to the station in Altoona for a little more than three cents and the dealer gets five cents! Don't anybody expect the dairy business is going to go down, under such conditions?

MR. HUTCHISON: You say the retailer gets five cents? Doesn't it sell for six cents?

DR. BECK: The producer gets three cents, the dealer gets five cents and the consumer pays eight.

The SECRETARY: The producer gets three, the dealer five and the consumer gets it in the neck.

A Member: I get everything between the producer and consumer. These people, these farmers at Altoona, why don't they sell that milk to the consumers themselves?

DR. BECK: They live out too far.

MR. SCHULTZ: It seems to me they ought to have a combination.

DR. BECK: It is the same old story, that the farmer will not organize properly and stick. The milk dealers are firmly organized all over this state they have had fights in Philadelphia and the dealer always wins out. We have had fights in Altoona, and the dealer wins out and the farmer loses. The dealers get the press on their side and the newspaper hollers that the farmers have a trust and are running up the high cost of living and are responsible for all these things, and the farmer loses his prestige. Public opinion gets back of the dealer and the farmer loses the force and power of public opinion. In every place I have been, the farmer loses out because he will not organize, or when he does organize, he won't stick. There are farmers' organizations of milk producers nearly all over the State, and when they call a meeting they never attend; there may be one or two there; but when the dealers call a meeting every man attends and therefore the farmer is losing out.

MR. J. ALDUS HERR: You forget that there are probably one tenth as many dealers as producers. The dealer can get his members together much easier than the farmer, and the man who lives ten or twelve miles from Lancaster, how is he going to sell to the consumer? He ships it in by trolley and hasn't access to the consumer. The retail man in the city has access every day to the door of the person he sells to. The situation of the two causes the difference. Another thing we resent and will resent as long as it is the system, and that is this thing of sending inspectors to inspect your

dairy who know nothing about it whatsoever, men who have never milked a cow, or fed a cow, and don't know the difference between a good, first class article and a mean one. I've seen it. Two years ago there was a gentleman approached me to inspect my herd. I said, "Certainly, walk in and look at it." He said, "oh, this is all right, I didn't expect anything else." I said, "Doctor, what do you know about dairying?" He said "Nothing." Now that's a fine proposition, and that's an actual fact. Is it much wonder, when we are asked by persons who know nothing about our business, to let them come and dictate to us what we are to do, is it any wonder that we should rise up against it and not abide by their decisions and sooner than abide by their decision go out of business or go elsewhere? It is preposterous that such things are allowed. Suppose I, as a farmer, were appointed one of a committee to inspect a hospital, wouldn't you laugh at it? So you should, it is not my business. Let the man be appointed—I am not hankering after the job, I have other things to look after—but let a man be appointed who understands what he is going to do, and then let him act accordingly.

MR. HUTCHISON: This inspection was carried on, as I understood, by the Health Department, the gentlemen who are inspecting the school houses, the health officers throughout the Commonwealth, were the inspectors, if I am informed correctly. That inspection now is under the livestock inspectors, trained veterinarians. Where could we go for a better prepared man than a veterinarian, to make these inspections? If these men are the men who are making these inspections, as I understand they are, why they are well equipped or else there is a deficiency in their education that they are receiving to conduct this inspection. I tell you today there is too much sentiment being cultivated on the question of what the farmer is receiving for his product..

The CHAIRMAN: When was that change made?

MR. HUTCHISON: Just about a year ago.

The CHAIRMAN: They are still continuing the old system in our section.

MR. HUTCHISON: I am sorry Dr. Marshall isn't here this morning; I know it has been changed in a number of counties. They to the prosperous farmer. They say, "Why, milk is eight cents. We always go on what the retailer gets and that is what is charged up are paying you people eight cents for your milk." The price of eggs when they get to Pittsburg or some other city is large, but they don't stop to think what the farmer has to take for any of those products back on the farm. Now, there is a disposition of people who want to reach the laboring classes, to teach those people that we are robbers, that we are taking from them an unjust price. That disposition seems to prevail, but it is not fair to the farmer. I have been reading these articles with a good deal of interest in magazines and papers all over the country, and they are trying to educate these men to be prejudiced against us, who are trying to feed them, and it is not fair to the farmers of this Commonwealth.

Take eggs; when the hen doesn't lay and the price goes up, then they charge that up to us, but you take the common affairs such as potatoes, wheat and things of that kind. The price of pork has been good. Why? Because people are not raising it. The price of meat take a whole carcass and it will sell today at an average of about ten cents, but what causes the price to go up—and that's charged against us—the man whose salary is fifty dollars a month, his wife goes in with the doctor's wife and must have the same cuts out of the meat. There's no boiled dinners sold. The hunkies and laboring people from abroad get that cheaper meat which is just as nutritious. The people will not buy that meat, they all want the choice cuts of it and then they charge that we are selling our meat for 20 and 22 and 25 cents a pound. This is not fair, but the newspaper people like to write a story to the effect that the farmer is getting this enormous price for his product.

I am not criticising newspapers; they are great educators, but they never write up the fact that you can buy the front of a beef in our country for 8 cents a pound, and it's hard to sell them because the women folks all want the hind quarter. That's what puts up the price, is the manner of living. I can remember when Dr. Beck and I worked on the farm; we'd come in and eat anything mother cooked, but today we are finicky about it and want lamb chops and the choice of everything, and that is what is against us in this.

It seems to me that the public is cultivating a sentiment against us on this question and we must rise up nicely and fairly and meet the situation. They think that a man who owns a farm today is a retired king, almost; that is what the city city man thinks. But let him go out without a bank account, and unless he follows the plow himself, and don't look back, he will find that he is going to strike a good many rocks in a financial way at the end of every year. This was on my heart this morning when this subject came up. It is a subject worth thinking about and studying. We are not a class against any people. The farmer is a man that wants to help all, but he wants a fair deal in this matter and don't want the retail price to be charged up against his production, in milk, for instance, when I know well that in Blair county, men are selling their milk at three cents a quart and in Altoona the consumers are paying eight cents a quart to the man that picks it up there, takes it over and lays it at their door.

A Member: With regard to the inspection problem, I think it is due to Dr. Marshall to say that an effort is being made by him to eliminate all inspections of dairies except by the State Veterinarian under the authority of the State. It was my privilege to be with Dr. Marshall last Monday evening, and such a bill was gone over and is now prepared to be handed to the legislature and will probably go through at this session. I want to state that to explain just what his position is on the inspection question. He wants to eliminate so many inspections; that was one of the prominent things discussed at that meeting.

MR. J. ALDUS HERR: In reference to the dairy inspection, I will give a little instance in our town. Dairy inspection is a very good thing. I know of an instance in our county, quite a large firm

that is shipping milk into one of the larger cities, and this man buys a great deal of milk. What does he do? He gets a veterinarian to inspect those herds of cattle. He goes around in his machine and inspects them. Now he never touches an animal, not one that he inspects that's put in his report. The dealer who receives the milk in the city puts on his letter heads, "The herds that produce this milk are personally inspected by our veterinarian." The consumer pays the bill, and we, as producers, receive nothing and the inspection doesn't amount to anything, it is void. That is what we resent. That is an actual fact. I know of more than 50 herds inspected in our county on the very same principle. The person who receives this milk, puts on his letter heads and envelopes what I stated here, and the inspection is usually void, hasn't amounted to anything, he hasn't touched a single animal in the entire routine of inspection. What does it amount to, except that the consumer must pay for that inspection and we as producers are supposed to sit quietly by. It is not just and does more harm than good. I stand up for a good inspection; I stand up for the State Veterinarian; I think he is doing good work, but as far as that end is concerned, it has been a failure in our county.

The SECRETARY: How long has he had it?

MR. J. ALDUS HERR: I have seen it done repeatedly; it was done over six months ago.

MR. HUTCHISON: Was it the veterinarian?

MR. J. ALDUS HERR: Yes sir; it was in this town no more than two years ago. I know what I am talking about.

The SECRETARY: Just a word of explanation: I don't know all about this business, but I know a little about it. The inspections were made formerly by the authority and direction of the Health Department. There is an old act of the Assembly, I don't remember just when it was passed, providing that milk inspection, to a limited extent, shall be done by the veterinary surgeons of the Commonwealth, the State Livestock Sanitary Board, the State Veterinarian being the executive officer of the Board. An arrangement was made by which the work should be passed over to the Veterinary Bureau or to the State Livestock Sanitary Board, and there was only a certain amount of money that could be expended. All moneys that are appropriated for specific purposes must be expended for the purpose for which they are appropriated; consequently it was impossible for the State Veterinarian to cover the entire State at once; but in order that the work might be started and some results shown, he appointed inspectors for the sections of country that were sending the largest amount of milk away to the city, and that is the reason why it has not reached your section, because there was no appropriation available, not sufficient appropriation to cover the State. Now, the inspectors, as I understand it, are instructed to inquire into the sanitary condition of the stables. They are not instructed to make a test for tuberculosis or any of the diseases that are likely to be

found in herds. They are simply to make an examination of the appearance of the dairy herd, whether they appear to be in good health whether the stables are in sanitary condition, whether all the conditions connected with the dairy, the barn and the dairy house and everything connected with it, are such as to be regarded as sanitary; and the work has been progressing for perhaps six or eight months, I can't tell just how long, but arrangements are completed, if the right legislation is secured, to cover the state with this work in this way.

MR. SCHULTZ: I get over the country a good bit and find that the people are pretty near all the same. I don't like to criticise the Department or criticise our Government from a farmer's standpoint, because I believe the farmer is responsible for the whole thing. I believe if the farmer would be properly organized and mind his business, he could govern this country and he could have the laws made to suit himself, to be of advantage to himself. The other day I met a friend of mine at Norristown. He was just getting on the train to come to Harrisburg. He is from Chester county and he said, "Do you know, Mr. Schultz, I'm in the Senate, and by the way, I am the only farmer that is in the Pennsylvania Senate." Now the farmer is responsible for that. How can we expect things to be favorable to the farmer when we don't attend to the foundation of them? We are responsible for it. Let us wake up and put men in office who will legislate and do things for the farmer. The farmer is the foundation of everything.

DR. BECK: This question of milk inspection is one of the most important things confronting the farmer. I live in the city and come in contact with both sides, and the frightful epidemics, as I stated in the paper I read on Tuesday, caused by milk in the hands of the farmer, are alarming; and the question that the people in the city want to know is this, whether the farmers are going to poison all the people or are going to consent to let half of them live, and whoever is going to do this inspection, it must be thorough and must be better. Now I like the system of the certified milk business; that has been, in my opinion, more successful than any other inspection, and that is done by the county Medical Society. There has not been one failure in a certified milk plant producing the goods, and I like that. There are three members appointed by the County Medical Society to inspect these plants. Now, they may not be practical dairymen, but they know something about hygiene and health, and there is where we want the work done. We don't know how the milk is produced, but we know whether it is going to poison the people or whether it is going to carry typhoid fever in and give 30 or 40 cases in a town and the annual crop lay sleeping in the cemetery hills over the State, and we must have more proficient inspection of dairy farms. I tell you gentlemen, it is alarming to see the dirty, stinking milk that is sent in from many of the little farms in this State and sold to people who can't help it, and not only this, but you are going to injure your own business and you are going to not only injure it, but ruin it. We had an epidemic this fall in Altoona produced by a dairyman that drove hundreds of people to stop using

milk as a food, they are absolutely up in arms against it and afraid to use it, because they are in danger of poisoning some of their children, and whoever does this business, it must be done thoroughly and right.

MR. SCHULTZ: I don't like to be on the floor all the time, but I have a word that I think would come in right here; if I were one of those dairymen out at Altoona, I wouldn't wait for that inspector, I'd send for him and send for the best men I could get; I would tell the consumers in the city what I was doing and I'd get more for my milk than anybody else. It's a matter of business. Farmers have got to get down to business. It's the same thing in fertilizers; you most put a first class article on the market; if you make a specialty, it's not a matter of price. People in the city, many of them would be willing to pay two cents a quart more for their milk if they knew it was pure.

MR. DE WITT: This is a question, I think, of great importance to the farmers of the State of Pennsylvania, this milk question and the inspection and care of it. In my judgment, the production of sanitary milk begins right in the stable with the cow. You may have all the inspections you are a mind to, but if your stable is not sanitary and clean and the man who does the milking is not sanitary and clean, and the man who does this inspection is not sanitary and clean and doesn't know good milk when he sees it—I am speaking a little bit from personal experience and knowledge now—we cannot expect to send to the city a good quality of milk. I don't know how these men at the present time that are representing the State get their positions as inspectors of milk or stables. I do know—Brother Dorsett, you needn't begin to laugh—I do know this, that a man in Tioga county is pretending to fill that position and he is not competent in any way or manner, by his personal experience and by his profession and knowledge of milk.

A Member: And personal appearance, too.

MR. DE WITT: To fill any such position, gentlemen, and he is only just a drawback to people who want this thing to be right, to have such men represent us. I have had it thrown up to me a number of times, "Is that the class of fellows that your Agriculture Board believe in sending out to inspect milk?" Of course I try to explain. Now, in regard to this veterinary question, I am aware of the fact, gentlemen, that it is a delicate question, but Brother Herr said some things that pleased me very much. I believe this, that the veterinarians who are making the tests for tuberculosis and such diseases as that, are all right, but I will venture to say to you gentlemen, as far as I am concerned individually, I always try to produce good milk and did when I was on the farm, if I do have to say it. I don't have to say it any more. I could go right through this crowd of men here, with my little knowledge of you, two years, and pick out men that I would entrust with the inspection of this milk so as to make it sanitary, rather than I would to any professional man who doesn't know anything at all about the question. I think, gentle-

men, that the man who should represent us as inspector of milk ought to be one of those fearless, sensible men that is not afraid to say to any man what he thinks in regard to a question like that. If we are to have sanitary milk, we must have men acquainted with how to produce sanitary milk. In our county of Tioga, we are today patronizing creameries and condenseries and we are a good way from the New York and Philadelphia market, so this is about the the only way we can reach any market in that county, but I will venture to say to you gentlemen, with all of those facilities for caring for the milk, that there are not as many cows in Tioga county today as there was a year ago. What do you think about it, Brother Dorsett?

MR.DORSETT: I'm not so sure.

MR. DE WITT: I'm satisfied. I am waiting to get the report of our assessors, and then I can say something about it. There is something radically wrong. We have a little neck of woods, fifty miles long, that can produce the best milk and butter in the world, so our milk dealers in the cities tell us. I heard a milk dealer in Philadelphia make that statement. He was a very prominent man and belonged to the milk dealers' Association in Philadelphia. Why shouldn't there be more cows kept in Tioga county than at the present time? Why should they be going back? Simply because of the fact that we cannot produce the milk for the price we are getting for it.

Another thing that confronts us, and I have listened to these papers since I have been here and have been very much pleased with them, but there's one thing about which I can't satisfy myself, and that is the question of how we are going to get milkers and people to take care of the farms? At the present time, in Tioga county—I don't know how it is with you gentlemen—but we are confronted with the fact that many farmers in that county today are disposing of their cows from the simple fact that they may be men fifty or sixty years old and cannot milk any more and cannot hire the help to milk, and the consequence is, I have had no less than five men, that owned properties there, good farms of anywhere from 150 to 250 acres, say to me, "De Witt, I'd be very glad to sell out my farm for a reasonable price and get out of the business, for the money at 4 per cent. interest, is worth more to me than the farm is." No less than five men who have such farms and as good farms as we have in the county have said that. Now, these are facts, and stubborn facts. You talk about the high price of milk. Milk will be higher than it is now, unless the farmers in the milk producing country have some way or some means provided whereby they can get their help to take care of these cows and the farmer can get a better price for his milk.

G. F. BARNES: In all fairness to the dealers and farmers as well, let us be honest with ourselves. We must start right at home. I have been buying cream from some people and paying them a good and fair price for it and receiving a splendid article. On the other hand, just this last summer, a farmer came to me and said, "I have

purchased a cream separator and would like to dispose of my cream in preference to making butter." I said, "I am in the market for good cream all the time." I gave him a price and he was very well satisfied with it. He delivered the cream to me once a day. I used it in my ice cream business, in which I have been engaged for twenty-six years, and the first few times it worked out very good; but one Saturday I had quite a bunch of his cream and, fortunately, I had kept it separate by itself, the entire week. I had iced his cream from Monday on up until Friday and made some of the worst ice cream I had ever put in my mouth. Had I continued with that kind of goods for a short time, I would have ruined my business. On Sunday evening I came to the conclusion that I would test this man's cream, so I put it in a can and placed it in a tub and put ice around it; had the jar the same width at the bottom as at the top, and two hours afterwards I went and examined it and had one-third cream and two-thirds water. Is it any wonder that dealers get quite a good deal of unkind treatment from their customers for selling watered milk, especially if it starts right at the farm. We ought to be fair in this matter. I think the farmers, as a rule, ought all to try to do their part, and I am paying today, or have been during the past two seasons, I have been paying 20 cents a gallon for milk, which I think is a fair price for it.

The SECRETARY: I notice in the audience an old friend who used to travel over the State of Pennsylvania, whom many of us have had the pleasure of meeting in the lecture field; and I take very great pleasure in making a motion that he be invited to a seat in council with us and have the privilege of the floor and that his name be entered upon our roll as a visiting member. I refer to Mr. S. B. Heiges, formerly of York county.

The motion was seconded and carried, followed by applause and call for a speech.

PROF. HEIGES: Mr. Chairman and Gentlemen of the Agricultural Society: It certainly affords me a great deal of pleasure to be with you. I am engaged in the same line of work you are, in the State of Virginia, having been connected with the Department of Agriculture there for twelve years. I organized their test farm under the auspices of the Department of Agriculture, and for quite a number of years have been connected with the farm institute board. I was formerly a member of this Board from York county. I came here to get some aid upon the very subject you are discussing now, that is the proper relation that should exist between the farmer and the consumer. We have the same trouble in Virginia that you have here, and we have another trouble of which you have no knowledge here, that is what is known as the hook worm disease. They have taken hold of that scientifically; they have experts, medical experts visiting the public schools and visiting the farms and villages and looking into the problem of sanitation; the vaults and closets connected receive close attention. They have the same trouble with the milk problem that you have here, and yet I tell the farmers from my experience in city life in the city of Washington, that they don't

consider this problem from both sides of the question—they look at it personally and selfishly. They have not taken into consideration the expense to which these distributors of milk are subjected in the city, their high rents, their taxes. Although Uncle Sam pays one-half of the taxes of the City of Washington, the other half is a pretty big one; and then as has been stated here by my friend Hutchison, nine-tenths of the people are living beyond their means. They have measured their height by a foot that is about 18 or 20 inches long.

I have studied this problem, having been pollengist of the Department of Agriculture for four years. I spent a half hour before my office hours every morning studying the commission houses and the problem of the disposal of fruits. They are subjected there, all of those commission houses are subjected to heavy expenses. Why, I have seen where women, who have walked to market, perhaps living way out in the extreme portion of the city, almost five miles from the central market, would buy a dozen Potomac herring for ten cents and then ask the fish merchant to deliver them. They have their automobiles, they have their express wagons and their attendants, great items of expense to them, and their profits are not as large as you think they are. It's the same way in the distribution of their milk. They are subjected to great expenses. I haven't come here for the purpose of making a speech, but I have risen just for the purpose of thanking you for the privilege of being with you, Mr. Chairman.

JOEL A. HERR: I have a supplementary report to make from the Committee on Credentials. There was another credential handed in from Wyoming county, from another society. We find on examination that the party we favored was the same organization that sent Mr. Knuppenburg here and their application came in due form, so we have considered that they are entitled to representation on this Board and have so decided.

A Member: I would like to say, in regard to this, that I have talked to Brother Herr about this matter and I believe he is entirely right in taking the first choice as he did.

The CHAIRMAN: Your action, then, remains the same as reported yesterday?

MR. JOEL A. HERR: Yes sir.

The CHAIRMAN: Is any action to be taken on this supplemental report?

The SECRETARY: I don't think any action is necessary. I would regard this simply as an explanation by the Chairman of the committee.

JOEL A. HERR: I simply wanted to bring the matter to your notice so that people would know that we had acted on the matter. It may also be a little precedent for some other, future action, when credentials come in in proper form, on proper blanks and in proper time.

The CHAIRMAN: What next? Are there any other reports?

MR. DE WITT: The resolution read by Mr. Hutchison—I didn't understand it.

The CHAIRMAN: Well, it was referred to the Committee and will appear again. Are there any further credentials? We are at the bottom of our program. If there are any others, let's have them quickly. I think we'd better proceed with the afternoon program. In that way, we will be able to get out, perhaps to attend the meeting that will be held over here this afternoon. I know there is going to be something here that will be very interesting to members of the Board. There is to be a demonstration of cutting up meat. The demonstrator is from State College and will have the carcass right before him, so that we will see as well as hear the reason for his dissecting the animal the way he does. That will take place about half past three o'clock, I suppose, and if we take this matter up now, possibly we can get in to see that.

J. ALDUS HERR: As Chairman of the Special Legislative Committee, I wish to say that our report is now ready if you wish to hear it.

The CHAIRMAN: If there are no objections, we will now listen to the report of the Special Legislative Committee.

Mr. Herr then read the following report:

REPORT OF LEGISLATIVE COMMITTEE OF THE STATE BOARD OF AGRICULTURE

By J. ALDUS HERR, *Chairman*

Your Committee recommend to the State Board of Agriculture the following items of legislation which they deem worthy of their consideration, and submit the following:

DEPARTMENT OF AGRICULTURE

Contingent fund, 2 years, \$15,000; Bureau of Statistics, 2 years, \$40,000; Farmers' Institutes, 2 years, \$55,000; Councillors and Demonstration Work, 2 years, \$40,000; State Board of Agriculture, 2 years, \$2,500; Special Examinations, 2 years, \$10,000; Fertilizer Control Work, 2 years, \$57,000; Feeding Stuff's Control, 2 years, \$35,000; Insecticide Control, 2 years, \$10,000; State Bee-Keepers Association, 2 years, \$2,000; Apiary Inspection, 2 years, \$3,000; Deficiency Keystone State Fair, \$8,500; Linseed Oil Inspection, 2 years, \$7,000; State Fair, \$500,000.

The CHAIRMAN: Gentlemen you have heard the report, what will we do with it?

MR. HUTCHISON: I move that the report be adopted and referred to the Legislative Committee of the Board.

Motion seconded.

The SECRETARY: I understand that the Legislative Committee follow this up before the General Assembly.

MR. HUTCHINSON: Yes sir.

MR. DE WITT: Do I understand that this vote now puts this question upon the minutes without any further consideration, or does it go before this Committee and then is it referred back again to the Board?

The CHAIRMAN: I think this vote refers it to the Committee to present it to the Legislature for action if they can secure it. It does not come back again to the Board if this vote is carried.

MR. DE WITT: Then we have no discussion upon the question?

The CHAIRMAN: Certainly, it is open now for discussion.

MR. DE WITT: I may have a wrong perception of some of the appropriations, but as Brother Herr had the appropriation of the question of demonstration there, what does that cover?

J. ALDUS HERR: "Field counsellors and demonstration work, 2 years, \$40,000." I understand that to mean this: In the Institute work, over the State, for instance, an Institute meeting here now under the direction of the Deputy Secretary, Mr. Martin, suppose it is meeting here, he sends his men here and there is a certain subject up in reference to dairymen; I hear his talk and get impressed a little with that. Now I want that man to come to me and show me how I can rectify my troubles in my dairy. Let him come there and show me that. What I mean by that is, let him come right out on the plant. Let Mr. Martin send somebody to me, or if it is somebody who is raising tobacco or corn or something else, let him go and explain the subject right on that man's farm; right there is the concrete subject that we want right before us. You can hear the address, but let him come in my dairy and tell me where I should put in more windows or how I should change my system of feeding, show me how to do it. That's what I understand the \$40,000 is for.

JOEL A. HERR: I think this is a report of the same body of men that is placed under the charge of Professor Hitchens of State College, and emanates from State College. They are not only field demonstrators. I don't understand that to be the men whom Professor Surface sends out through the State as orchard inspectors and one thing and another. I think it is this committee of scientific men sent out from the College in the various fields. There's a number of them now sent out, I believe under the charge of Mr. Hitchens, under the control of the State College at the present time. Am I right?

The CHAIRMAN: I'd be glad to have an explanation from Mr. Martin on that.

MR. MARTIN: The motives that prompted the offering of this resolution are something like these: During the past three or four years, especially, the Bureau Division of Farmers' Institute and the Secretary of Agriculture have received hundreds and thousands of letters following our institutes, in which instruction has been developed along the lines of dairying, horticulture, poultry, soil conditions, rotation of crops, etc. Following these institutes, from year to year, we have received letters of inquiry, letters asking for some one to come and assist in carrying out the methods. Our hands are tied. We have no appropriation; we have no means by which we could send the man, in order that we could the better enforce and fortify the teachings developed at our Farmers' Institutes that have been carried on so long in Pennsylvania. My fellow farmers, this is simply an outgrowth of the great work that has developed in the oral teaching at our Farmers' Institutes, nothing more and nothing less. I don't know that I should continue so long in this explanation. In brief words, that is the sum and substance of it. I may say now, in reference to the question by Mr. Herr, of Clinton county, the National Department of Agriculture has sent out into Pennsylvania some persons who are located in half a dozen counties whose work it is to counsel with the farmers. These counsellors, are said to be under the direction of the State College. As I understand it, the National Department pays one-half the expenses or a proportion of the expenses; the county pays the other portion of these expenses for the keeping up and sustaining of this adviser in the county. Now I believe I am stating correctly, am I not, Mr. Schultz?

MR. SCHULTZ: Yes.

MR. MARTIN: That part is well and good, and to that we take no exception; but that doesn't fulfill the condition for which we are asking, at all. We hope to be understood in that matter, thoroughly understood; that's the condition. Pennsylvania with her 67 counties, with all this vast development, I don't think we need be afraid, gentlemen, of crowding the field from the United States Department of Agriculture or from the State College; with what they have done, I don't think we need be jealous and fearful of each other. If I should send a man to Schultz's county to enforce and give directions along some line of our teaching at the Institute, and I know he has a good friend who is a young man there, I don't think that young man and Mr. Schultz would say that we are infringing upon the rights or upon the duties of that young man, would he?

MR. SCHULTZ: No sir.

JOEL A. HERR: May I ask Mr. Martin a question? I want to know whether that \$40,000 suggested in the report means \$40,000 for the demonstrators or professional services?

MR. MARTIN: It doesn't; it means \$40,000 for the use of the Department of Agriculture in the work I am just now defining. I am one of these kind of fellows, and I guess you know me, if you don't, you ought to, I have been before you and amongst you for four-

teen years and I speak of what has been developed, and if you gentlemen feel that the work accomplished by the teachings of these institutes is not worth it, if you feel that we are not entitled to such a small consideration as \$20,000 a year to fill that breach, just vote against us, that's all.

MR. DE WITT: I have long since learned that if you don't ask questions about things you don't know or don't understand, you won't find out, and I thank Mr. Martin very much personally for I know now what to say when the question is asked me.

Another thing, I may not know anything about this appropriation for the proposed State Fair if the bill should go through, and the like of that. We might as well ask a good deal more money than \$500,000. In my judgment, that wouldn't more than start it and we would look small in the eyes of Ohio. It would look like we were going to play ping pong. If we go in for a State Fair, let's go in as good as the rest or stay out. The New York State Fair has buildings at the present time valued at \$648,000, and they propose in the legislature this year to appropriate to it \$298,000 to be spent next year upon their grounds. This is from the Secretary of the New York State Fair. I just throw this in. I don't want to find any fault, I'm too young in the game to throw any snags in any wheels, but if we start in on any such thing as this, as I said before, let's start just as good as anybody else or a little bit better.

MR. SCHULTZ: It might come into the minds of some, why has Montgomery county got such an expert and the other counties not? The reason is simply this; when we heard what was doing, we sent a committee to Washington at once, we were on the job and got a man; that's what the farmer wants to learn, to get on the job.

A Member: I will state that Washington county is favored with an expert sent by the United States Government. They pay him a certain amount and the county raises him the balance.

A Member: Butler county has a man; the Government pays one-half and the citizens of Butler county raise the other half, \$1250. That is the way we are supporting it. Our demonstrator, Mr. Adams, is somewhere here in the building. If he was in the room now, he could tell the work he does among us. He comes right onto the farm. If we want to know anything, he comes out there and tells us. He tells us how to build the fences, how to clean the cow stables, or anything we want to know. He is one of those straight, honest Dutchmen, the kind of a man we need. We have men that come to our farm and tell us how to clean up things and tell us where to place certain buildings, that we should move those buildings away, and we ask them where we should set them and they couldn't tell us, but Mr. Adams can do this.

MR. ZERR: I had a talk with a gentleman from State College who sends these demonstrators out. He was telling us that the State was only paying \$100 towards the support of these men that are sent out in the different counties. There are six of them already sent out in different counties in this State, and the National Government

is paying a big bunch of that money. As I understand, this \$40,000 appropriation is to help pay for those demonstrators from different counties. Berks county was going to have one of those demonstrators, and a gentleman said to me this morning that he would give \$100 of that \$1200 to pay for that demonstrator. I am pretty sure we will get that accomplished, and we are going to have one of these demonstrators in good old Berks county during this next year.

The SECRETARY: I want to supplement what Mr. Martin said by making a statement of several cases that came to my mind some years ago. I think perhaps about three years ago I received a letter from a farmer in the eastern part of the State who said he was engaged in the dairy business and that he had heard a lecture delivered by Doctor Conard of Chester county at a Farmers' Institute, on the construction of dairy barns. He said, "I want to be right up to date and I want you to send Doctor Conard over here to assist some persons that I shall have here in drafting plans for the changing or remodeling of my barn; I am not satisfied that it will pay." Now, we didn't have any fund upon which we could draw, but fortunately the General Assembly has provided the Department with a contingent fund that made it possible for me to send Dr. Conard over there, and I heard afterwards from that gentleman that it had added very materially to his prospects for doing good work in the future.

I have frequently been called upon to send somebody to deliver special lectures where they are going to have a corn show. A matter of that kind came up in Bucks county a few days ago, and instead of sending to the Department, they sent direct to the man and the man went over and delivered the lecture at the corn show. First, he judged the corn and then he delivered a lecture giving reasons for the awards he had given, and he made out his bill and sent it to them and they returned the bill and wanted to know whether the Department of Agriculture didn't pay it. He got on the wrong track. Unfortunately for him, I wouldn't have had the money to have paid in this instance, even though they had written to me.

Another case is just now called to my mind in Luzerne county. A few years ago Dr. Funk attended an Institute and delivered a lecture upon the subject of taking care of orchards, revivifying old orchards, bringing them into condition in which they would bear, and as a result of that lecture, he was called upon to visit a farmer in that section, I think in Luzerne county. I have a record of the matter at the office. He was called upon to visit his farm, look over his orchard and see what could be done. He went up there and spent a day with him, and, as a result, between \$4,000 and \$5,000 worth of apples or fruit were sold from that orchard year before last, and the same amount, or I think a little larger amount was sold last year. Now these are simply instances that come to my mind that represent the character of work that is intended to be accomplished or carried on by this appropriation if the General Assembly sees fit to make the appropriation.

A Member: Just to illustrate what our worthy Secretary has said: Last year when we held our Farmers' Institute in Bedford county, one of the speakers was on the program on pruning. When we got

to the church where the lecture was to be given, I found there was an orchard just beside the church, and I said to Mr. White: "Suppose we go out in the orchard and find a place where we can have a little demonstration? You pick the tree on which you wish to demonstrate." And in the afternoon, about 3 o'clock, after his talk, I announced to the audience that we would go over to this man's orchard and have a demonstration on pruning right there in the orchard. That demonstration was more effective on those people than his talk, from the fact that they could see with their eyes, just exactly what was to be done, and they went away better satisfied than if he had talked there for two hours, just from the one-half hour's work right in the orchard.

JOEL A. HERR: I am intensely a Pennsylvanian. I believe Pennsylvania is the best state in the Union. I want her to have the best college. I want her to have the best Department of Agriculture and I want her to have the best State Fair. But we don't come into these things always by leaps and bounds. I think we have made a very nice, liberal appropriation, if we can get it—\$500,000—to start a fair. I don't think Ohio started that well, when she started first, but it's exactly like the State College—we had to hammer away for a while to get people to see what they wanted. We will start with \$500,000 for the fair to show what it will do. We can get what we want in the future, but remember we are Pennsylvanians and have got to fight for Pennsylvania.

A VISITOR: I haven't a vote in this organization, but I would like to say a word in regard to this work that is being proposed. You know that there are sections in the State of Pennsylvania that have adaptation for agricultural development unequalled anywhere else in the Union. We can produce in the southeastern section of the State, in Greene, Washington, Fayette, Westmoreland and parts of Beaver and other counties, the most superior grades of wool that can be produced anywhere. There is no section that I have ever heard of or known of in the United States where such wool can be produced as in that section of the United States, and today it is undeveloped. There was a time when it was partly developed, but the amount of wool that can be produced in that section of the State is simply enormous. I contend that it is the duty of the Department of Agriculture to take hold of that proposition and develop it, show what can be done.

Then take another thing: We can produce horses in that section of the State that are only equalled by the horses that are raised in Kentucky, and that thing has not been developed. Now, then, take another section of the State: Take Susquehanna, Wayne and parts of Luzerne, at least the part north of the river, part of Bradford, Wyoming, Sullivan—the apple orchard of the State. I know that doesn't sound very kind for my own county, because we have people down there who think that in that part of York county, where I live, the apple was raised that tempted Eve to sin. But they are mistaken, that's all. Those in the northern section can't raise wheat and corn such as we hear of in the southern part of the State, but they can raise the fruits and they can beat us all to pieces. Now why not

have the state take hold of a proposition like that and develop it, help those men to do it and do it well. And then take another section of the state—take the section that begins right over here in Adams county. There's a combination of soils that I don't think their equal exists anywhere in the world, a combination of about four different types. It runs partly through York county; it crops out down in Liberty; it goes on through Chester, over into Lehigh and Berks—and Dr. Funk is on it—it crosses over to New Jersey—fruit soils of a different kind entirely from those up in that northeastern section, but adapted to peaches and apples and other fruits, and the likelihood is, not equalled anywhere. Thousands of thousands of acres of it. Now why shouldn't the State take hold of a proposition like that and put Pennsylvania where she ought to be along these agricultural lines. Another section is right up here on the top of the mountain and running over from the northeast to the southwest a distance agriculturally undeveloped but with wonderful possibilities. Nothing is being done. Why shouldn't we take hold of this and make it what it ought to be? And this demonstration work I hope is just the beginning of the possibilities of Pennsylvania.

MR. STOUT: I have forgotten the amount that is to be appropriated for the inspection of bees. I would like to know the object of this appropriation.

J. ALDUS HERR: "State Bee Keepers' Association, 2 years, \$2,000; Apiary inspection, 2 years, \$3,000." The \$2,000 is for the Bee Keepers' Association and the \$3,000 is for inspection, as I understand it.

MR. STOUT: Under what Division of the Department is this appropriation to be applied?

The SECRETARY: That is in the hands of the Economic Zoologist. There was a bill passed by the last General Assembly providing for the inspection of the apiaries of the State, but there was no appropriation made for it, and that was a matter that was overlooked. The bill just passed at the close of the session, and in order to carry out the provisions of that act, this appropriation is asked for.

MR. STOUT: As I am a bee-keeper, and somewhat interested in this question, I want some explanation and information in relation to it. It was proposed to appoint a bee inspector. I heard it recommended a few years ago—, Bee Inspector. Well now, there is a disease prevailing among our bees called foul brood, and I suppose the object is to go among the people and try and terminate this disease. If you appoint a Bee Inspector for the State, he would be a hundred and fifty years old before he'd ever get over the State, as a matter of course. If you'd appoint enough Bee Inspectors to do justice to this undertaking, you'd have to appoint a little army of bee inspectors to go out among the people and inspect their bees, and how it would take is hard to say, but this bee business is one of peculiar interest to me, because I make a little of my living out of it and I am opposed to any of this appropriation.

I have right here a little article copied from the New Jersey reports of the last few years, written by Dr. Lambert, of the University of Liege, or whatever you pronounce it, Belgium. He comes out with the assertion and proves that it is nothing more or less than the upper cresus or ever present bacillus menses tensu vulgari. If you can analyze that, all right; it's the same thing that prevails among the bees here, and it is very beautifully distributed throughout Nature, especially in the vegetable kingdom, and is the same fellow that causes stringy bread dough and other disagreeable conditions for cooks and bakers. This discovery fully accounts for the apparently spontaneous appearance of the disease in apiaries, and only proves what I have maintained for years, that foul brood is never entirely out of the country, but only awaits proper conditions for its manifestation when its bacilli enemies are no longer numerous to hold it in check. When the counteracting bacilli become numerous enough, of course the disease runs out, practically, or for a time, completely disappears, and, which is equally certain, in the future to re-appear sooner or later.

Now this is something like measles, a sort of an epidemic that comes and goes, and why the State should be asked and why we should ask the State to appropriate money to have bee inspectors to come around and try to help me in my individual business is paternalism of the rankest kind.

And another thing, the bees as I said already, are on the wing, they don't stay, but they fly away, they escape from our yards and go out in the forests. If a bee inspector is to come around in my yard or somebody else's yard and look at the bees, some will be immovable frames, some in boxes and some out in the forest; how are you going to send a man out in the forest to inspect the bees and exterminate this foul brood if it prevails there? He can't smell it and has to have climbers to go out in the forest and get up in the trees and destroy the bees that are diseased. I can't favor the appropriation, although I am a kee-keeper.

The motion to adopt the report was then put and carried.

The CHAIRMAN: If you prefer that we go on further, we will hear the report of the Agricultural Geologist, W. H. Stout, of Pinegrove, Pa.

MR. STOUT: Brother Halberstadt arrived since the Board began its sessions and is now present with his report.

The CHAIRMAN: Very well, then, we will take his instead of yours.

MR. STOUT: I am not quite ready to report yet, because I forgot to ask some of the members to watch out for my paper and when it comes up, to put in a little applause here and there.

The CHAIRMAN: Gentlemen I have the pleasure of introducing to you Mr. Baird Halberstadt, of Pottsville, Pa., the Economic Geologist.

Mr. Halberstadt then read his report as follows;

REPORT OF ECONOMIC GEOLOGIST

By BAIRD HALBERSTADT, F. G. S.

"There is no natural object out of which more can be learned than out of stones. They seem to have been created especially to reward a patient observer. Nearly all other objects in Nature can be seen, to some extent, without patience, and are pleasant even in being half seen. Trees, clouds, and rivers are enjoyable even by the careless. But the stone under the foot has nothing for carelessness but stumbling; no pleasure is to be had out of it, nor food, nor good of any kind; nothing but symbolism of the hard heart and the unfatherly gift. Yet do but give it some reverence and watchfulness, and there is bread of thought in it more than in any other lowly feature of all the landscape. For a stone, when it is examined, will be found a mountain in miniature. The fineness of Nature's work is so great that into a single block, a foot or two in diameter, she can compress as many changes of form and structure, on a small scale, as she needs for her mountains on a large one; and taking moss for forests, and grains of crystals for crags, the surface of a stone, in most cases, is more interesting than the surface of a hill; more fantastic in form and inconceivably richer in color."

So wrote the famous Englishman, John Ruskin, years ago. Is it not a fact that the soil is looked upon by many as merely dirt; something unclean from which to hold aloof? Let us then give the soil, as Ruskin begs for the stones, some moments of consideration and we will find in it—"more bread of thought" than in the stones themselves, for the soil is perhaps more complex than the stone, and upon it our very existence depends. Food we must have. Without it, we cannot live.

From whatever standpoint we view it, whether physical, chemical, biological, geological or agricultural, the soil presents most interesting problems. Microscopic examinations of it reveal beauties, that to the thoughtless or careless, are unknown. If those of you, who have never examined it, microscopically, or even under a strong magnifying glass, will do so, its beauties will be readily seen and you will be amply repaid.

As success in agriculture depends largely upon the fertility of the soil, it will be interesting to the farmer to learn of some of the stages through which rocks pass before they can be really considered as the base of soils, and something, too, perhaps, of the agencies acting upon them that have brought them to their present state of division.

The crust of the earth is a more or less solid rock mass. Over this lies a mantle of covering composed of clay, sand, gravel, and broken rock all of which have been derived from the parent or original rock mass. This covering is especially interesting to farmers, because it forms the soil and subsoil with which they have so much to do.

The superficial covering is largely the result of the action of the atmosphere and water upon the outer parts of the rock mass. While much of this mantle rock has been derived from the rock immediately

beneath, it must be remembered, that in some localities, the material has been transported from great distances by rivers, glaciers, and by the wind in the form of sand and dust.

There is unceasingly going on what is known to geologists as the process of graduation. Through this process, the surface of the earth is being brought to a common level. Mountains and points of elevation are being eroded or planed down and the earthy matter and loosened rock fragments thus derived are being transported to fill up depressions at lower levels.

In times of flood, vast quantities of soil, rock and organic matter are carried and spread by streams and rivers over the bottom lands, while millions of cubic feet of solid matter are annually carried off by rivers to the ocean floor, where some time in the future it will become solid rock. It will thus be seen that nothing is really lost through this process, since the loss to the land is gain to the sea. A mere transfer from one locality to another.

To those, who have not studied the question, it seems almost impossible that the hard rocks could be so easily broken up. It must, however, be remembered that Nature, as a rule, works slowly, unceasingly and quietly, but the forces or agencies at her command are most powerful—so powerful indeed as to be almost beyond computation.

It must be understood that rock strata do not always remain at exactly the point where they were originally laid down. Movements of the earth's crust have sometimes raised them from their positions, and in some places, have overturned them upon themselves.

Again, there may be faults where the corresponding strata are broken so badly, that layers of rock which were originally joined are now many feet apart.

As can be readily imagined, such occurrences weaken the mass, for the rocks, subjected to such influences, are often cracked and crushed. Through such movements, rocks that have long been deeply buried, are brought to the surface where, in the course of time, they too are subjected to erosive action. Hard rock, if continually exposed to atmospheric action, will ultimately crumble. There must be, therefore, some force or agency employed to accomplish this. Atmospheric action upon stone can be plainly observed on old tombstones, especially those having the inscriptions in raised letters; these, it will be seen, are gradually becoming obliterated, through the subtraction of particles both chemically and mechanically.

The action of the atmosphere on rocks is largely chemical, for in the presence of moisture, certain constituents of the air, especially carbon dioxide, materially assist in the disintegration of rock masses, by changing some of their constituents from an insoluble to a soluble form, in which form they can be removed by water. Oxygen is a very active element as an atmospheric degrading agency. The removal of any portion of these constituents, of course, materially weakens rocks and assists in further disintegration. This is one form of what is known as weathering.

Changes of temperature play an important part in rock disintegration. The sun's heat is a very important factor. Rocks, being poor conductors of heat, expand and contract more rapidly on the surface than in the interior. The sun shining upon a rock may heat

its surface to such an extent that it becomes too hot to handle, while the under side may not even be warm, hence we have an unequal rate of expansion in the rock. With the removal of the source of heat, the outer surface contracts more rapidly than the interior; moreover, there may be a difference in the rate of expansion in the several constituents of the rock. These differences cause strains which tend to weaken the mass.

The wind, too, not only abrades rocks but transports vast quantities of material in the form of dust and sand. In Kansas will be found a thick mass of volcanic dust, while sand dunes are frequently 200 feet thick. In China, there is a deposit of Loess 1,000 feet thick. These deposits were transported by the wind.

In the work of gradation, water is by far the most potent of all the agencies employed. In the form of rain, it dissolves and carries off in solution certain rock constituents; in the form of frost and ice, it tears the masses asunder; in the form of glaciers, it not only loosens the rocks along the sides of the valleys in which they are formed but grinds and crushes them, as in a mill, as it transports them from place to place.

In bodies, such as streams, rivers and oceans, its work is indeed great, not only in the way of detaching soil and rock and reducing the larger to smaller fragments, but likewise its powers of transportation. The unceasing beating of the waves detaches and grinds up rocky cliffs; encroaches upon and changes the shore lines. Rivers not only carry large amounts of detrital matter but wear down their banks as well as their beds.

As the water flows on, the rock fragments, rubbing against each other, are reduced in size, until they become sand and mud.

In the process of rock disintegration, organic agencies must, by no means, be overlooked, for they exert far more important influences than are generally known. Roots of plants frequently penetrate rock joints and wedge the masses apart. Plants are capable of drawing from and absorbing certain constituents of the rock, and through their decay, give up organic acids which exert strong influence in assisting disintegration. Again, through the penetration of their roots, the sub-soil is broken up. The action of bacteria, to a certain degree, influences disintegration.

Nor must animal agencies be forgotten; Earth worms, ants, crawfish, gophers, prairie dogs and other burrowing animals, through their mining operations, materially aid in the preparation of the material which subsequently becomes soil.

There are many topics to which attention should be drawn, because they are peculiarly interesting when viewed from either chemical, geological or agricultural standpoints, though not as yet well understood.

One of these is the nature of the so-called "humus acids," the product of vegetable decay. In referring to these, Prof. F. W. Clark, the eminent Chemist of the United States Geological Survey, says, "These substances, however, humic, ulmic, crenic and apocrenic acids are not true acids at all, but vague mixtures of colloids whose precise chemical nature is yet to be determined."

A second is the probable origin of Hardpan. As every farmer knows from practical experience there frequently but not always

occurs, between the soil and the sub-soil, a stratum of extremely hard and tough material which resists both plow and pick. This has been variously termed Sole, Pan, Hardpan and when black in color, Blackjack.

In none of the many books on agriculture, soils, geology or physiography, examined, could be found any reference to this peculiar stratum or layer, nor indeed anything upon its probable origin. Inquiry among others failed to find that any had been made. Knowing that hardpan in some localities, is ferruginous, while in others, it is of a calcareous nature, a clue to the probable origin of hardpan suggested itself.

To a process quite similar to that through which some iron ores originate, the formation of hardpan is seemingly due. For a more intelligent understanding of this, a brief description of the process of the formation of iron ores may not here be out of place.

In its passage through the air, rain water removes much of the dust, dissolves soluble solids and absorbs gaseous matter. It will be seen then, that by the time it reaches the earth, it is no longer pure. Nearly everywhere save where the elements or man have disturbed it, the soil is overlain by the mantle of vegetable mould or vegetation in various stages of decomposition. Water, percolating through this stratum, dissolves and carries off with it a portion of the organic matter in solution. The precise nature of this new mixture or combination, as in the case of the so-called "humus acids" has yet to be determined. That it possesses strong solvent power is certain.

In percolating through the sand and clay, it is brought in contact with the ferric or sesquioxide of iron which is generally present in all soils and rocks, though in an insoluble state. The organic matter, in the solution, being a powerful reducing agent, seizes and removes a part of the oxygen, reducing the ferric to a ferrous oxide. The burning of the organic matter by the oxygen thus obtained results in the formation of carbon dioxide which at once combines with the ferrous oxide, forming carbonate of iron. The carbonate of iron, under these conditions, is soluble and is carried along by the water to lower levels, where under conditions entirely favorable, it concentrates, through evaporation, and a bed of carbolite iron ore is deposited.

Water with the so-called "humus acids" in solution which acts so effectively in the reduction of ferric oxide is, seemingly, as effective in forming hardpan.

After this probable solution of the problem was reached, my attention was called to Bulletins No. 330 and 491, United States Geological Survey. In the latter on page 460, Dr. Clark says, in speaking of the so-called "humus acids," "they have some geologic significance, and H. Gedoiz has shown that their alkaline solutions, percolating downward and meeting lime salts, are precipitated, forming the impervious layer known as hardpan."

In conclusion, let us remember that in all things, the Law of Compensation obtains. Gain is followed by loss and loss by gain. If rock or soil be transported, it is not lost, but merely transferred. If soil be removed by the elements, it will be replaced, for in the course of time the upper portion of the subsoil will be acted upon

by the same atmospheric, chemical and organic influences which transformed what was once subsoil into soil; but the process is slow, requiring years, too long indeed to suit the present day needs, nevertheless, we must remember that "Time at last sets all things even."

The CHAIRMAN: If there are no objections, this report will be received and published with our proceedings. Next on the program will be, Forests and Forestry by Mr. Robert S. Conklin, of Harrisburg, Pa.

The SECRETARY: Mr. Conklin was told yesterday that we could not hear his paper out of order and he will be here this afternoon.

The CHAIRMAN: The next paper is Mr. Hutchison's; I believe we heard that yesterday. Next is the report of the Committee on Resolutions. Is there any report at this time, Mr. Naginey?

MR. NAGINEY: There isn't anything to report at present, but we will take action immediately after adjournment on the resolutions that have been submitted to us.

The CHAIRMAN: There being no other business before the House at this point, we will hear the report of the Memorial Committee.

Mr. Rodgers then read the report of the Memorial Committee as follows:

REPORT OF MEMORIAL COMMITTEE

WHEREAS, It has pleased Divine Providence in His wisdom since our last meeting, to call our brother and co-member of the State Board of Agriculture, Mr. A. T. Holman, from his home on earth to a home above,

THEREFORE RESOLVED, That we, who have been left, bow with humble submission to Him who doeth all things well.

Mr. Holman was a big man in both body and mind. He was, by natural power and temperament a leader among men, although young in years. He died as he lived, one of the first citizens of his community. Whatsoever he undertook, he mastered and the farms and old home, with their improvements and conveniences, stand as monuments to his genius. As a member of this Board, he was always ready, willing and able to do whatsoever was placed upon him.

"None knew him but to love him;
None named him, but to praise."

RESOLVED, That we tender our sincere sympathy to his widow and children, and that these resolutions be recorded in the minutes and a copy sent his bereaved family.

It is with a sense of profound sorrow and loss, that your committee records the death of our worthy Botanist, Prof. Wm. A. Buckhout.

Prof. Buckhout has been the Botanist of our Board for many years, and his reports were always full of interest and instruction to the members. He loved his profession and had the happy faculty of showing to others some of the beauties and wonders of God's handiwork as revealed to men through plant and flower.

As a teacher of boys and girls, he had the happy quality of presenting to them the beauties of Nature as revealed to them through the plants. Being the father of a family of boys and girls himself, he knew how to interest his students and at the same time give them lessons in plant and insect life, growth and development, that remained with them as they lived.

In Prof. Buckhout's death our Board has lost a most valuable Consulting Specialist, the student body an earnest, faithful, competent instructor and the farmers of our State a wise adviser and friend.

RESOLVED, That a copy of these resolutions be spread upon the proceedings of this meeting, and that the Secretary be instructed to tender to the bereaved family our tenderest sympathies.

MATTHEW RODGERS,
R. J. WELD,
P. S. FENSTERMAKER,
Committee.

The resolutions were adopted by a rising vote.

The CHAIRMAN: Is there anything else any of the members wish to bring up at this time? We still have some time left, and if there is any business that you wish to bring up at this point, we will hear it.

The SECRETARY: I would like to announce that there are two items on the program that have not been changed. They were set for this afternoon; the report of the Agricultural Geologist. I suppose that Mr. Stout possibly has had time to make arrangements with those from whom the applause is expected to come, but I would prefer, if possible, that we leave this item until the afternoon session, because I feel sure there are some who would like to hear this report, that are not here now; and then we will have for this afternoon the report of the Specialist on Forests and Forestry. Out of courtesy to the head of this Department, who has served us well in the past, we ought to be here this afternoon to hear his report. I think we can hear these two reports and still get over to the other meeting in time to witness the demonstration to which I referred a little while ago. I think it will take place about half past three, and we can get in there possibly before that time.

The meeting then adjourned until 1.30 P. M.

Thursday Afternoon, 1:30.

Vice-President Blyholder in the Chair.

The CHAIRMAN: The Board will please come to order. This afternoon we will first hear from the Agricultural Geologist, Mr. W. H. Stout, of Pinegrove, Pa.

MR. STOUT: You see I have been doing some work since we adjourned this forenoon. I have these gentlemen engaged in my behalf to applaud at the proper time. Now you may find that my heart is not tuned to the same chords as those that preceded me. They were playing on high G and I play on low D this afternoon, so I will give you due notice what to expect. Of course, in my estimation, this is the most important paper that is presented here,, and I would like everybody to hear it.

Mr. Stout then read his paper as follows:

REPORT OF THE AGRICULTURAL GEOLOGIST

By W. H. STOUT

It is only within recent years that my attention has been given to Agricultural Geology and soil investigation. The United States Bureau of Soils has conducted extensive surveys and many of the states have likewise had experts and scientists engaged in the same line. The subject has been so elaborately treated in publications which almost every farmer reads that there seems little for an ordinary farmer to discuss. By spreading out a little, however, touching a little on the past, present and future, it is hoped to merit a hearing.

Pennsylvania is naturally divided into four grand divisions, geologically and topographically. The section east and south of the first, the Kittatinny Mountains (the Blue Mountains), is largely composed of ancient igneous and sedimentary formations giving character to various soils, of which the limestone, the new red sandstone and the Utica and Hudson group are the most extensive. In some counties north of the Blue Mountains, the same Trenton group of lime and the slate formations on top, produces some fertile valleys, including Fulton county in a basin at McConnellsburg, while Bedford, Huntingdon, Blair, Centre and Clinton contain wider deposits forming the productive lime soils. North of the Blue Mountains between this and the Allegheny Range is a wide valley mostly of Devonian rocks excepting in the eastern sections where the carboniferous forming the anthracite coal fields occurs.

The Allegheny section is composed of the same Devonian and Carboniferous formations as is the wide valley of the south, with this distinction. The Allegheny formations occupy an almost horizontal position, while the valley deposits are collapsed, broken and disturbed, producing hills and valleys in which the soil changes rapidly from one formation to the next.

Part of the eastern, northern, northwestern and western section differ from the others, consisting of sand, clay, gravel and boulders of glacial or more recent age. These various systems are divided into about fifteen sections or formations in regular order and numbered from one up and named after the New York geological survey, after the United States reports and the late survey by the bureau of soils, so there is much confusion that only a scientist or professor can remember. The elevations vary from the tide level to 2,800 feet above

which produces climatic conditions naturally, while the deep valleys are intensely hot during some months the higher altitudes are cooler, the winters longer and more severe so that climatic conditions vary in altitude more than latitude. Pennsylvania is properly called the Keystone State, as it is the water shed and drainage system of the country east of the Rocky Mountains through the Mississippi to the Gulf of Mexico; the Susquehanna into Chesapeake Bay: the St. Lawrence into the gulf on the northeast of the United States.

The latest formation is that along the Delaware River, sediments from the interior forming marshes and swamps and good soil where it is dry enough for cultivation. Climatic and soil conditions are favorable for the production of a variety of crops, so that we have sections suited to the cereals, potatoes, fruit and dairy products each requiring special adaptation. The azoic rocks the originally first formed solid foundation composed of many elements are the source of all future deposits.

Through disintegration under the influence of heat, cold, rain and carbonic acid the mineral elements contained in the granite were dissolved, carried into the oceans and deposited as soil which afforded the first support to organic life. Lichens and mosses being the first land plants and minute organisms developed in the oceans, introduced into the world the first living beings of a low order which continue in existence at the present time. Vegetable and animal life during the ages had produced prodigious results. The immense coal beds throughout the world derived from plant life, the phosphate rocks from animal life, the salt, oil, gas and others are typical cases, of how natural elements accumulated great stores of usefulness and value.

In the oceans no less than on land the results of micro-organisms have produced equally or greater results. The oceans teem with life, one-celled animals so small that their minute skeletons contained in a cubic inch in rock formations from the flinty Protozoan shells 41 billions of such so named diatoms. The famous polishing stone of Bohemia is 14 feet thick composed of these organisms, and a deposit of 1100 feet thick in the Barbadoes.

The chalk formation in Europe, Ireland, England, France, Denmark, North Africa, Syria, Asia and Central Europe form an irregular line 3,000 miles long. The most fertile soil in England rests on and is formed from this deposit in places more than a thousand feet deep.

Chalk is an almost pure carbonate of lime which is yet forming in the oceans by minute organism called Globigirena existing near the surface of the oceans in such vast numbers where they obtain lime from sea water to produce shells one-hundredth of an inch in diameter. Although so minute they are so numerous that their shells form most of the lime stone and chalk formations thousands of miles in extent and of great depth. Silica and lime formers are of various classes and under the general name of plankton and polysistena supply the food for fishes. The sponges and corals, bivalves and fishes of many kinds and sizes also add their remains to the ocean floor.

The Polysistena forms a skeleton of marvelous beauty and are called world builders. The docks consist of 80 per cent. silica, together with many other minerals which when dissolved enter the oceans to supply material for sea life to maintain itself.

The so called diatoms obtained from mud sediment in ponds,

streams and the ocean are carefully washed out first with water, followed by strong acid, which dissolves all but the silica, which proves it to be such, as the silica is almost totally insoluble. Such as contain lime and chalk like the globigirena would by the same treatment be entirely destroyed. To a person sea water tastes salty, of which it is largely composed, contains also iron; lime, silica, sulfur, bromin, potash, nitrogen, magnesia, etc., including gold in solution, out of which animated creatures obtain their nourishment.

The abundant ocean fauna from invisible cells to the monsters of the deep lead a parasitic and cannibalistic life, preying upon and destroying each other, changing from one form in to another, until finally the remains of all become incorporated with ocean sediments, giving rise to new rocks and soil. If the ocean beds were uplifted, as has often happened, the same stratified order of deposit would appear as in the silurian and devonian formations around us.

From the facts now established and the investigations of scientists it is safe to conclude that the clays and sands and the soil was largely by living organisms during long past ages. The igneous rocks are originally the sources supplying the material out of which are derived the elements in the oceans, and the sediments composing the stratified rocks. From the continents the water courses are steadily bearing to the seas large quantities of sediment so that gradually the soil is carried away often to the serious damage of cultivated land. The interior heat of the earth, along with volcanic eruptions and outbreak of intrusive trap in a molten state produces changes. By the flow of lava thousands of square miles have been overflowed, the trap less forceful but extending over wide districts especially in the section from the Eastern to the Southern states after the deposition of the limestone produced a great change. The oldest sea beds presented to us are the sands, mud, clay, and pebbles, the wear and tear of ancient oceans now forming the continents and many islands. The soil, the base of the existence of all land plants and animals is only a shallow accumulation of fine particles of of past ages.

All nations and races are dependent upon the products of the shallow covering—known as soil, and all industries are equally dependent upon the art of agriculture. Given a soil of proper consistency of clay and sand in proportions too make it friable, moisture containing and deep enough for practical use, although depleted of fertility to the point of exhaustion, such a soil can be restored and made productive by the application of the necessary elements required by the plants. It is but a matter of expense and this is what kept abandoned farms in many sections from being cultivated, viz., the cost and competition with naturally good virgin soil. The color of soils has an influence on crops. Those of a dark and red color absorbing and retaining heat better than light soils.

The exploring expeditions sent out by various governments have found the greatest extent of the sea floor to consist of red mud, so reasoning by analogy it may be concluded that the red soils were formed under similar conditions, having iron disseminated with the clay. The black shale of the coal measures are charged with carbonaceous matter found in fresh water surroundings the fossil remains of the ferns, forests and minor plant not growing in salt water.

The finer the soil particles the more plant food is available and the longer a soil will remain productive and fertile, other conditions being favorable.

As practical farmers without time to study the sciences and theories about past periods and evolution we must devote our time and energy to the production of crops for self support and contribute largely to a horde of idlers, drones, and high priced officials which engages all our time and talent to exist and meet obligations, often forced upon us. There is a class of doctrinaires and theorists very much in the lime light of late who seem to fear starvation in the near future, so troubled that they lie awake nights to make plans for farmers to produce larger and larger crops.

They point to little European countries whereby intensive cultivation, cheap labor and the extensive use of fertilizers produce larger crops than the average of this country.

England, Germany, France, Holland and Belgium are named as models, without any references and presumably without any knowledge of the geology and climate of those sections. Take Belgium as an example, a little country between Germany and France, with an area of 11,373 square miles a population of nearly seven millions in contrast with the State of Maryland, with an area of 9,941 square miles and a population of 1,296,000 one with 615, the other with 130 inhabitants to the square mile or five times as many people to the square mile in Belgium as in many of our older states.

A most important point is the natural fertility of the soil. In most of the most productive sections of Europe where those little world builders the Globigirena created a deposit of chalk 3,000 miles long and in places a thousand feet thick. The limestone and chalk formations are most universally the most productive because new soil is constantly forming from the disintegrating rocks, and the chalk especially being softer than the average limestone is self restoring. Producing large crops is not only not profitable for the farmers but positively unprofitable during favorable seasons when crops are universally good. With 353 millions bushels less corn in 1909 than 1910, the small crop of 1910 brought 129 millions more dollars than the larger crop.

There is another loss accompanying the production of large crops which seems entirely overlooked, that is the lost fertility. Four ordinary crops of wheat, corn, oats and hay, if nothing is returned to the soil in the meantime, means a loss of 252 pounds nitrogen, 37 pounds phosphate, 296 pounds potash, which is worth to replace at the prevailing prices for fertilizers, \$67.00 for each acre.

Within recent years the Jethro Tull theory that land could be perpetually farmed and made productive by a rotation of crops without the aid of fertilizer, has been revamped and literature distributed which is positively harmful to those who give credence to the theory; fortunately no farmers have any faith in the fallacy.

Of late years farmers have more friends and advisors than at any earlier period and if offered without a sinister motive by scientifically and practically scientific men, farmers cheerfully accept and profit by their advice. Regardless of consequences farmers are urged, encouraged, entreated and prevailed upon to produce more and more, and for whose benefit? The poor widows and orphans owning railroad shares; bank stocks, interest in factories, etc. No!

but in the interest of transportation, speculators, dealers, handlers and idlers, to reduce the high cost of living to the idle rich and laborers.

There is no doubt but that the crops can be largely increased, being but a question of economics, and if there were any assurance that it would be remunerative and funds available, the farmers, regardless of their unskillfulness and imagined ignorance, will do the rest.

If farmers could foretell the seasons, it would be more profitable to cultivate less land, save labor and fertility get remunerative prices for their products instead of cost or less than cost, as frequently happens. Corporations govern their output by the prospective demand, control and dictate their prices while farmers are urged to produce to the limit, and be the prey of sharpers and promoters. While this topic covers a wide range, all relates to the soil, and the producers part in changing from inert substances into energy producing, healthful and useful soil products, it is necessarily brief and unscientific, otherwise it would cost more. One other thought relating to agriculture, rural life, domestic and public affairs, there is more than necessary paternalism.

The National Department of Agriculture has a force of men at work taking samples of soil from which we learn that certain sections are adapted to certain crops, a fact well demonstrated during years of practical experience, having taught that the application of manure, nitrogen, phosphoric acid, potash and lime will improve the soil and make it productive.

The farmer's attention is often directed to the large crops produced now and then and periodicals and newspapers seem to delight in disseminating the misleading conclusions in circulating the reports. It would be amusing if less serious in its effect upon the city people and consumers generally who are deluded with the impression that the crops must necessarily be immensely profitable, while if the whole truth were known they often cost more than their market value. Another source of misinformation is in the so called corn contests, where only the yield is stated omitting \$5.00 interest, \$1.00 tax, \$5.00 for cultivation, \$4.00 for husking and \$8.00 loss fertility on an acre.

The immense crops produced last year afford a prolific theme for inexperienced writers intimating through the public press that the farmers must necessarily become rich. Dividing the value of the crops produced, not including cattle, it is found that each farm has for its share \$960 and that the average value of all farms is \$6,444, so that the interest obtained on the investment is one and one half per cent. There is just as much protein, carbohydrates and fats the same amount of energy producing elements in a bushel of wheat one year as another, although a ton of steel rails cost more than a ton of wheat.

Bread is one of the cheapest articles of food, yet the cry is universal for cheap bread.

There is undoubtedly a wide gap between a bushel of wheat and the bread produced from the same which is not the fault of the producer of the grain. We have in this country a large class of pseudo economists that were trained in the counting houses, high schools and col-

leges, who think because they are experts in mathematics and the roots of Greek and Latin, they know more about agriculture than the men who have made it a life study.

They come with their theories and false doctrines, seeking employment and notoriety at the expense of the public, evidently under the impression that the future welfare of the country depends upon them. There are no less than seven bills before the Congress now for extension work, co-operative instruction, to diffuse economics, disseminate practical instruction, encourage teaching of agriculture in the interest of irrigation, drainage for botanical and agricultural research and more diffusing among the people practical and useful information, home economics, horticultural and industrial interest.

Not one relates to cheaper transportation, reduction of expenses, cheaper coal, cheaper iron, dry goods, sugar or coffee, but all pleading for appropriations and employment of stripling graduates and impractical theorists to teach the farmers how to farm, while they farm the farmers.

An organization of bankers, manufacturers, politicians, promoters, etc., known as the National Soil Fertility League were distributing literature and soliciting aid. At the head of this is a great farmer and president of a great railroad system having branches in the Canadian northwest, the one person especially interested in Canadian reciprocity, to obtain cheap products and the transportation of the immense Canadian crops.

While not successful in this project, as yet, they are responsible for the defeat of one presidential candidate who listened to their syren song for cheap bread and cheap wire fencing. It is only a little more than 400 years since the first white man saw the shores of this continent and it was many years later before agriculture developed into an industry. Europe stood ready to receive American products to maintain their armies in military and manufacturing pursuits. Under the impression that the soil would always continue productive, no heed was given to the steady depletion going on under the system of sending aboard grain and its products without returning to the soil more than the little wastes that accumulated with some lime to hasten more rapid exhaustion, and produce more crops for export.

Having no more virgin soil, timber land and prairie to bring under tribute, with an interesting population, and decreasing fertility, a serious problem confronts this nation. How to meet the vast debt and interest due on inflated stocks and bonds often 100 per cent. above their true value with no farm products to spare, to pay the obligations of stock jobbers and promoters is alarming to financial kings, money lords and Shylocks the world over.

The people of this country have run riot with their natural resources, having exterminated the original settlers, most of the game, destroyed the forests, destroyed the fish by polluting the streams, sending their disease and death dealing currents oceanward, so that the God-given waters are now poisonous and unfit for use. Finally, the soil fertility is being rapidly depleted, that is becoming the most serious problem of all. Farmers are penalized for producing large crops. The value of the large crops produced in 1912 are only 83 cents to the dollar or 17 per cent. less than of 1911. If Agriculture had its just rewards there would not be the rush of young people from

country to towns and cities, decreasing the population in rural districts as shown in the last census reports. Several of the best agricultural states in the Union are Ohio, Indiana, Iowa and Missouri lost largely. There has been a decrease in rural population in all but two states, Montana and Wyoming, while nearly all towns and cities have increased from a small per cent. to 300 per cent.

With all the cry about the high cost of living and back to the land movement so strongly urged, there is no visible sign of cheaper produce and less of a movement back to the soil. After studying the problem over of soil and soil fertility, the one conclusion arrived at by all who have given the subject consideration, is that the soil has been and continues to be depleted of the available elements naturally in the soil.

That the average agricultural soils contain almost unlimited amounts of nitrogen, phosphoric acid, potash and lime according to chemical analysis yet with one accord they all advise the use of manure fertilizers and lime and of late sulfur.

Insoluble elements are of little use to quick growing crops such are required to feed the people and the stock and are constantly removed year after year while it would require hundreds of years to produce forests of timber extending its roots deep, far and wide to obtain the necessary plant to produce the small quantity of ash that is contained in a forest.

Since Liebig's time, with the experiments of Lawes and Gilbert, as well as others in foreign countries and our experiment stations all agree that it is necessary to obtain plant food from other sources than that supplied by the land itself.

We are advised to make, save and supply manure, but no one has yet discovered a method by which grain and crops can be produced and sold for foreign and domestic use and the plant food elements retained and manure supplied. Like an eclipse starting in the east casting its shadows westward so moves the cloud of humanity westward leaving wreck and ruin in its path, already darkening the western horizon that it will soon girdle the earth back to the Garden of Eden where it started. There is a ray of hope for the future in this that chemists like Prof. Emil Fisher, of Berlin, and others will devise methods to take a cup of water, some carbolic acid, nitrogen, phosphorus, potassium, chlorine, lime, iron, silicon, etc., to manufacture the nutritional equivalent to a beefsteak, a loaf of bread or an egg omelet. This will interfere with agriculture as a matter of course, but may reduce the high cost of living.

The CHAIRMAN: If there are no objections, the paper will be received and spread on the minutes. The Committee on Resolutions is requested to retire and be ready to report after the next paper is read. Mr. Conklin not being present, Mr. George H. Wirt, of the Department of Forestry, will read his paper. I have the pleasure of presenting to you, Mr. Wirt.

MR. WIRT: Ladies and Gentlemen: The Commissioner of Forestry desires to present the following report:

Mr. Wirt then read the report as follows:

REPORT OF FORESTS AND FORESTRY

By GEORGE H. WIRT

The Commonwealth of Pennsylvania now owns 982,336 acres of land for forestry purposes. 16,041 acres were added during the year, among which was the Pinegrove Furnace tract, one of the old landmarks of the State.

The average cost of this land being \$2.25 an acre, makes the total expended for the purchase of land, \$2,217,255.76. The land is distributed in 26 counties and divided into areas known as State Forests, each State forest having its own specific name.

The forester is the executive officer of each State forest and looks after the administrative affairs, while the ranger is an officer appointed mainly for protection, but charged with the duty of performing any work which may be assigned to him by the forester in charge.

The rangers are usually chosen from the neighborhood of the region where the State forest is located because of their knowledge of the local conditions.

Two million seedlings were planted on the State forests during the year, making a planted area of about 964 acres. The total number of seedlings planted to date amounts to 5,800,000 or making a planted area of 2,800 acres. The present inventory of the seedlings in the nurseries amounts to 8,969,614. 66,854 seedlings were furnished during the year to private individuals at the actual cost of raising.

The species include white pine, red pine, Scotch pine, Norway spruce, oaks, walnut, hickory, ash and larch. A few experimental plantations of bull-pine were also started.

The numerous requests for seeds and seedlings is encouraging and shows that forestry is becoming a practical operation in Pennsylvania from the individual standpoint as well as from that of the Department.

Roads to the extent of 1,500 miles were opened and made passable through the State forests. No State forest is complete without a good road system which makes convenient access to all portions of the great forest and which is a great convenience to the people of the locality.

About seventy-five miles of telephone lines were constructed during the last year. These forestry telephone lines are constructed principally for fire protection, and are located in remote and isolated regions where no other lines are in operation. Individuals are allowed to attach to these lines, providing they purchase their own instrument of an approved type. The appreciation of the people residing in these localities is very evident by their willingness to co-operate with the Department officers in promptly notifying them of a forest fire. A number of fires were thus prevented from doing much damage.

The State forests, in proportion to their area, suffered less from fire during the last year than in any previous year and not a few of the foresters were able to report, "No fires in 1912." The climatic conditions helped to lessen the number but a better feeling towards the forestry movement and the willing co-operation in their preven-

tion by the public at large helped in no small degree. 711 camping permits, which included 4672 persons were issued during the year.

Nine students were graduated from the State Forest Academy last August and assigned to different stations on the State forests. The dormitory, as completed in 1910, is a building measuring 142 feet by 46 feet, two stories in height. The first floor contains eleven rooms and a library. The second floor has twenty-one rooms, enough to accommodate 30 students, affording ample space for store rooms, toilet rooms and linen closets. A double foresters' cottage was erected, and the dining room in Wiestling Hall enlarged and improved.

The course has been enlarged—the first year's course now comprising Botany, Physics, English, Forestry, Bookkeeping, German, Chemistry, Meteorology and Trigonometry. The second year's course comprises Dendrology, Technology, German, Geology, Utilization, Soils, Botany and Chemistry. The third year's course comprises Finance, Protection, Surveying, Management, Economics and Roads.

The summer courses are devoted to practical forestry operations on the Mont Alto State forest and consist of Nursery Work, Forest Mensuration and Surveying.

Many of the foresters carried on educational campaigns in their respective counties by giving talks on forestry before the local public schools, institutes and other school meetings.

On motion the report was received and filed as part of the proceedings.

The CHAIRMAN: I would like to ask Mr. Wirt whether their attention has been called to investigating what is causing the death of the hickory trees in Western Pennsylvania?

MR. WIRT: I may say that the cause of that death is the hickory borer. It is not only common in the western part of the State, but it is common all over Pennsylvania. It is a borer which attacks the wood. The eggs are laid on the bark and the little beetles or grubs work themselves under the bark and then gradually distribute themselves in all sorts of places from one central position, and when those grubs develop into beetles, then they bore themselves out of the tree and the tree is dead or in a dying condition before you know that the tree is affected. There is practically nothing you can do except cut down the tree as soon as you see it is badly affected, and if the hickory is large enough to be used, there is no reason why you should not use the wood. The best proposition is to peel it and burn the bark so as to kill as many beetles as possible.

The CHAIRMAN: Is the Committee on Resolutions ready to report?

The SECRETARY: Mr. Chairman, while the Committee on Resolutions is getting ready to report, I would like to suggest that there ought to be a rousing vote of thanks given to the Specialists of the Board and to the Chairmen of the Standing Committees, for the very excellent manner in which they have discharged the onerous duties that have been imposed upon them by the Board. We were

reminded by one of the Specialists, that matter which is not regarded as strictly scientific, don't cost as much as that which is scientific; however, that does not apply to the work of the Board. We are fortunate in having men who are scientists in special lines and others who are well informed without considering themselves scientists, and we are under an obligation of gratitude to these men for the manner in which they have discharged their duties. If you are in accord with me on this subject, I think we ought to give them a rousing vote of thanks.

MR. RODGERS: I would move that a vote of thanks be given to all those Specialists, those Committeemen who have prepared those reports that we have heard read; that we extend to them a hearty vote of thanks.

Motion seconded.

The SECRETARY: Before that motion is put, I want to say this: It is no small matter for the Chairmen of these special committees to collect and collate the information they bring to us here, in proper form for publication. This information goes out all over the State, and I don't know of any better method that could be adopted to secure this valuable information for the farmers of the Commonwealth. I shall be very glad indeed if we give a full expression of our appreciation of this work.

The motion was then unanimously adopted.

MR. HUTCHISON: We want to thank you, gentlemen. It is a pleasure to produce some thing for the Board of Agriculture, something that may help the farmer, and for my part, I worked at it as a matter of love. I hope that I have done something through my life that may be of benefit to the farmer and the people of Pennsylvania, and I want to thank you for your kind words; they are better than gold.

MR. STOUT: Gentlemen of the Board: I feel very thankful for the honor that has been paid me and for the value that has been placed upon my humble services, and I want to thank you for returning me again to the honorable position of Agricultural Geologist. While I may not be deserving of it, I will try to do my best.

The SECRETARY: There is just one other matter, if the Committee on Resolutions is not ready to report. You will have observed, Mr. Chairman, that a number of the Chairmen of the Committees which have reported and some of the specialists have recommended certain legislation, and in the adoption of these reports, we adopt the views that they express. That ought to be conveyed in some way to our Legislative Committee, with the instruction of the Board that they will take this matter up and endeavor to secure such legislation as is endorsed by the Committee, from the General Assembly that is now in session. I make this suggestion. If it be your will, that the Secretary shall go over this matter and make an extract from these reports showing what legislation has been recommended, and

hand it over to the Legislative Committee, I shall be glad to do that, although it is going to require considerable effort on my part, but young men, you know, are glad to work and it is better to "wear out" than to "rust out," a truth, I think, will be affirmed by Mr. Stout and a good many of us. What is your pleasure with regard to the matter?

MR. BIDDLE: I believe it will be a very good plan, from the fact that in my report I suggested some means to compel a neighbor who did not spray his fruit for scale,—some means to cause him to do so, so that he would not be a menace to his neighbors who were spraying their trees every year and trying to get rid of it.

MR. GLOVER: I move that the Secretary proceed to make this outline he spoke of.

Motion seconded.

The CHAIRMAN: There is one thing connected with this that I think it would be well if it could be provided for. I believe it would be well if we could find the means in some way to remunerate that Committee for an extra trip to Harrisburg, when the proper time comes, to appear before the Appropriation Committee and make these matters plain to them, what they are intended for and what is accomplished by them. I believe a committee of that kind, a regular Standing Legislative Committee, appearing there at the proper time, would do great deal of good, perhaps more than all the resolutions we might pass here.

The SECRETARY: In response to your suggestion, I would say that I have a little hope that possibly there may be enough left out of the appropriation made for the expenses of the State Board of Agriculture and that would be a legitimate matter of expenditure, the expenditure of that money to meet the expenses of the Legislative Committee. I don't know until the expenses of this meeting have been paid, whether this is true or not, but I will know.

The motion was then adopted.

MR. HUTCHISON: I would move that if the Secretary finds that he has enough money remaining, of this fund, to pay the expenses of this Legislative Committee coming here to attend to this business as designated, that he be authorized to do so.

Motion seconded.

MR. SCHULTZ: It seems to me that should not be in doubt: If there is not enough money here to pay for it, let us make provision right away. I think that is highly important that those men who made those reports should be here to back them up.

MR. HUTCHISON: The Legislative Committee?

MR. SCHULTZ: The Legislative Committee is what I have reference to; if there is no money here, let us provide it.

Mr. Hutchison's motion was then adopted.

The CHAIRMAN: Now is there anything further that you want to talk of while this Committee is getting ready to report?

MR. HUTCHISON: I spoke to Brother Herr and said that you were anxious to get through on account of this demonstration.

The SECRETARY: Couldn't we take a recess and come back here at four o'clock to hear the report of that Committee?

On motion, the Board took a recess until 4:15, at which time the Report of the Committee on Resolutions was read by Mr. Naginy, as follows:

REPORT OF COMMITTEE ON RESOLUTIONS

Your Committee on Resolutions beg leave to report as follows:
Resolution No. 1.—Relative to Automobiles and Roads: We regarded as jocular and took no action upon it.

Resolution No. 2.—Relative to taxation of cows: We disapprove, for the reason that they are only taxed for local purposes, and the deficiency would only have to be made up by other means of taxation.

RESOLVED, That we appreciate the value of the joint sessions of the State Board of Agriculture, the Breeder's Association, the Horticultural Association and the Dairy Union, in a united effort to further our agricultural interests, especially in regard to a State Fair and the Pennsylvania State College and other interests requiring appropriations by legislative enactment, and we would advise future joint meetings in alternate years.

RESOLVED, That we heartily commend Governor Tener for his deep interest in Pennsylvania agriculture and for his pledges to support appropriations for the benefit of Pennsylvania State College, for a State Fair and other agricultural organizations.

RESOLVED, That we express our entire confidence in the ability of Prof. R. L. Watts, Dean of the School of Agriculture of Pennsylvania State College and feel proud of having a Pennsylvania product in that important position.

In conclusion, we would call the attention of our Legislative Committee to the Report of the Resolutions Committee one year ago and the action of this Board on the same.

Respectfully submitted,

M. M. NAGINEY,
J. A. HERR,
F. S. BRONG,
W. F. HOLTZER,
Committee.

The CHAIRMAN: Gentlemen, you have heard this report. What action is to be taken? If there are no objections, the report will be filed and printed with the proceedings.

JOEL A. HERR: I think the Resolutions ought to be adopted, or else they will not be expressive of the sense of this meeting.

The CHAIRMAN: The Chair stands corrected.

It was moved and seconded that the Resolutions be adopted.

MR. HUTCHISON: The Deputy-Secretary of Internal Affairs, Mr. Craig, called attention to the matter and asked that a resolution be offered, he thought it was fair that the machine that produced the milk and butter for the people of Pennsylvania should not be taxed for local purposes or for any purposes. We were talking about the high cost of living and the ground he took was that we were taxing the cow from 75 cents to \$1.00 for local purposes, and so many things are exempt that he thought they should be exempt from taxation, and at his request I presented that resolution, and, of course, I don't wish to take any issue with the Committee at all; they are men I have confidence in and I believe they did their best, but I presented the resolution in good faith, believing that the cow, which today is one of the most valuable assistants we have on the farm should not bear the burden of taxation; it is taxing the few for the benefit of the many. That is my thought.

JOEL A. HERR: I would like to say in reference to that,, that we believe in equal taxation. We don't believe in avoiding any share of it. All we want is to pay no more than our share; but there are large dairymen that live right within the precincts of a town or city and wouldn't pay any of the taxes if they could help it. Inasmuch as this is for local taxation, it would not affect the county very much for local taxation, and I believe farmers are already overtaxed, three times as much as the corporations in our county and they would be that much relieved.

The CHAIRMAN: Are there any other remarks on this question? If not, it goes before the house.

The report of the Resolutions Committee was then adopted.

MR. BLYHOLDER: It is very late in the session, and yet these remarks that have just been made call up one of the greatest questions, I think, that we have to contend with in the State of Pennsylvania, and one that is causing the farmers, perhaps, more injustice than anything else, and that is the inequality of taxation, and yet I believe it is the fault of the farmers themselves, because of their lack of knowledge of the question. Last winter, at a Farmers' Institute, I stated the exact condition of taxation in the State of Pennsylvania as we find it—real estate in relation to personal and corporate property. I gave those facts, stating what the different corporate properties were assessed at, what taxes they paid, and then made the statement that real estate—all real estate, city and town real estate, really

pays more than country real estate—but the average was about 18 mills, while the average paid by corporate property was about 3 1-2 mills. A smart farmer in that Institute, who sat there listening, went to the nearby town. He went to a trust company that did their business in a building and he asked them if they didn't pay any taxes on that building. They said, "Yes," they paid so much altogether. Then he went to a bank and asked them if they didn't pay any tax on that building. They told him, of course, that they did. Then he printed a long article in the paper about how Blyholder had misrepresented the thing. You see that man was so ignorant that he didn't know the difference between a bank and a building that it did business in. I think these questions ought to be discussed at our Farmers' Institutes and people ought to have some light thrown on them. These are the conditions we find and yet we have the burden of taxation to bear, and when we try to enlighten the people, that's what we get back. I think the Board should have taken some action to enlighten the people on this subject of taxation.

The CHAIRMAN: Are there any other remarks?

MR. DEWITT: I coincide with what Brother Blyholder said. I at one time was unfortunate enough to be one of the Commissioners of Tioga county. We had a great time with the coal lands and corporations in that county, with the assessment of their properties, to get them assessed at something near their actual valuation. We calculated that the farm property in that county, in many instances we knew that it was assessed for more than it would bring at a sale, either public or private. The consequence was that we got about \$450,000 more valuation upon the property of the corporations of the county than they had ever had before, and we got something over \$800,000 more money at interest. The consequence was I wasn't elected Commissioner again because the corporations didn't want me. What I want to get at is this; there are too many ideas among the farmers of how the taxes of the country should be divided. I have read a great deal about this tax question and I have thought a great deal about it, but, gentlemen, there's only just one way to get at this tax question and that is to tax the dollar wherever you find it, it makes no difference what it is invested in.

On motion of Mr. Hutchison, the Board then adjourned.

Thursday Evening.

JOINT MEETING OF THE FOUR ASSOCIATIONS

Joint session of State Board of Agriculture, State Horticultural Association, Livestock Breeders' Association and Pennsylvania Dairy Union, in the Board of Trade Auditorium, at 7.30.

Mr. C. J. Tyson in the Chair.

The meeting was opened by music.

The CHAIRMAN: We are now going to hear from our friend, Hal Fullerton, of Medford, Long Island. I know you have all come expecting to hear Mrs. Fullerton tonight, but she is sick and could not come and Hal is here to do the whole performance.

Mr. Fullerton spoke as follows:

THE MARKET GARDEN

By H. B. FULLERTON, Medford, L. I.

Neighbors and Friends: I can't do it her way; she is the better half and I am very frank to acknowledge it; and besides that, she is a Pennsylvania Quakeress and I am merely a Texas cowboy. There is a wide difference there, you know. That poor woman, however, has been fighting tonsilitis ever since she was six years old. She hasn't any tonsils, they have all gone long ago, but still she has tonsilitis, and to anyone whoever had tonsilitis I need not explain what tonsilitis does to them. It doesn't keep it up very long, but it's going some while you have it.

Her end of it was the most important end, to my mind, the market garden. In the first place, most men are, way down inside, afraid, and they need some good woman as full partner to keep them braced up. Our job looked like a big one. Nearly all things you don't understand and that no one has left any particular record of, it's a hard proposition on the jump. As a matter of fact, it was not half as hard a job as your ancestors and mine had when they went clear out West as far as Philadelphia or way up to Harrisburg and fought Indians with one hand and drove a very bum ox with the other, after they had cut down the trees, and when their pioneering meant that before the tree touched the ground you had to plant a grain of corn where that tree was, or you starved to death that winter. That kind of pioneering meant something and there again the woman was the one that enabled the man to do the pioneering, no doubt about that, in my mind, not at all; so, I am awfully sorry that Mrs. Fullerton is not here to play her part of it. We have always played partners and do now, and this is the first time I ever tackled this subject alone, which was, "The Market Garden."

From the very beginning, in our particular job, we went outside the market garden, a little flowers, fruit and anything, and neighbor Tyson ran an awful risk in perpetrating me on you, anyhow, because I don't use your language and I use a lot that some of you never saw printed and I may slip up. If I do, just remember that I came from Texas.

Now, if you put out the light we will start the pictures. I am not a professor and I haven't any secrets that Mrs. Fullerton didn't find out fifteen years ago—that's before the world began, you know, here. The first two or three pictures that we will get on here in a minute will illustrate one of the reasons why it's no use for a young man to go West; this eastern country, Pennsylvania, New York and Massachusetts, is just full of unoccupied land exactly as good as the same land was when our grandfathers and great-great-grandfathers

—it doesn't make any difference, a few "greats" — started on this work, and why we go out West, where we have to water the land to get ragweed to grow and have to bring the water for miles and have to practice dry farming for two years in order to get a may-be-crop the third year, or go up over the border where it is so cold that they only get a good crop about once in every three or four years, and then it's a first-rate one, when our own country just teems with land like this—you have thousand and thousands of acres here that will raise the best apples on earth. Oregon and Washington won't touch it on markets; you've got miles of land so hilly that there's only one thing to plant, and that's grapes, and you can raise grapes on that land that will meet any competition possible.

Now, what we did was done on Long Island, just remember that, and what we did there I believe you can do anywhere. The things that we may all be dead wrong, but we got the stuff, we delivered the goods, just the same, but it was done on Long Island. Maybe you can't do it here—I think you can—but maybe you can't. Maybe you can't do it in Texas or Maryland or New York State, but on Long Island you can. (At this point the various views were started through the stereopticon and the remarks of the speaker refer to them.) One-half of that Island was just like that; that isn't pretty. How much would you give, an acre, for that sort of stuff for agricultural purposes? Nothing. It was in the market for one dollar, three dollars and six dollars an acre, for three centuries and nobody bought it, and finally the islanders said it was no good and wouldn't grow anything. What did they say that for? Look what Nature grew! Grew it every year, because it was to be burnt over every year for a hundred and fifty years. The experts said it was no good and the soil is only half an inch deep. I had a careful analysis made after we got the land cleared and the report I got was a corker—the soil was absolutely worthless. It was devoid or shy of everything under heaven necessary for plant growth. We started 357 varieties and grew them all, Nature did, and then placed that plant on that land. That's an oak. An oak don't grow where there's nothing under it to support it; an oak don't grow in half an inch of soil; an oak don't grow on sand; an oak don't grow where there is no water. That's the reason we kind o' took a jump. Now, we don't mean that those soil analyses were not good; it don't mean that at all. It don't mean that the scientist isn't right. It don't mean that the bookman, the professor, hadn't helped us worlds, for he had, but it does mean that nature frequently does things that no man will ever find out exactly why she did it or how. I don't believe that we will ever know how a plant grows or why. I don't believe we will ever know what is absolutely necessary for plant growth, I mean all that is necessary. I don't know where my oak trees on Long Island, for instance—I say mine, because I love the Island so much that a good deal of it is mine, although I don't own any; neither does the railroad—other people own it—I don't know why we find lime in all our oak trees, but you can't find any in the soil because there wasn't any of any description. Perhaps the trees get it, they know where—I don't—maybe out of the air; maybe they make it. Maybe calcium isn't an element, maybe it is a mixture of other things.

There's 270,000 acres of that stuff. There was a road through it and

quite a prominent Long Islander came out to see what we had done, not to see our farming. He knew what Long Island would do. His ancestors lived there. He came to see how we had solved the labor question. He said he couldn't find out how we kept our laborers year after year when other people offered them three times as much as we paid them and they stayed with us. It's a thing I learned out West some years ago, that every fellow is exactly as good as you are, it don't make any difference what his name is or how he wears his whiskers or what language he speaks, and as long as you treat these people who happen to work for you, in this generation—perhaps your grandchildren will work for theirs by and by, you mustn't forget that, we've got a lot of kings over here working for people who used to be serfs, and the reason our laborers stayed with us was simply that everyone had a home—\$375 was all it cost for three rooms, but it was their home. Each one had a little garden around it and can do what he pleases with it, it's a home, and that's what every man in this wide, wide world wants and that's what most all women want. There are a few in New York, I understand, that are not looking for homes; they are looking for heights, but all of them, way down deep, really want a home, the same as all human kind do. He came out to see that, Long Island Teddy—you, perhaps, know him as Roosevelt.

The woman there, (referring to the slide), is my partner. Now I want you to understand that is "some" woman, that can take a high-wheel western motor wagon and drive through that sort of stuff, perfectly peaceful, perfectly quiet, and when anything happened you never found it out till after she knew it and applied the remedy. That's a Quakeress, too; that isn't the cowboy, but she can handle that bucking broncho better than I ever handled one in the old days, and they are Quakers, so you see she is really full partner. There isn't anything she can't tackle, all right. The question was how to get that land cleared quickly. We knew about stump pullers and we had helped chop them out. The land was bought the 7th of September, 1905, for the try-out, and against the United States Government, all the scientific men and all the residents of Long Island—some of them had lived there for 285 years, man and boy, as they say, came there and never left—we wanted to grow things the next year. There was one quick way; we tried it and it worked. In thirty days we had ten acres planted to rye. That is what helped us, that little charge. There is where our happy home is now; it pretty near made the cellar for us. That's what we figured on; it saved digging. We blew the stumps out at the same time. That picture was taken a hundred feet from the blast and my partner stood there. There was bric-a-brac fell around on the camera and on us, but we knew this much; we learned it partly by observation away back when I was in Texas. We found a good many people used to save expenditure by turning up their toes, as we call it, and about nine times out of ten the bullet was in the back—or the knife thrust was; so out there we learned that if you keep your eye on the man he never can hit you in the back. We practiced the same thing on the stumps. When those things went up in the air we kept our eyes on the stump and when the stump wanted to light where we were, we side stepped and let her light, but if we had been on the dead run, many a time they'd have lit on us. We were never injured, nor any of our men, simply because we kept our eye on the point of danger. To us, this was the proper development

of land close to a great city like New York that had never had enough to eat since Indian days, when they used to catch their own stuff.

There are a lot of speculators that don't let New York get enough to eat; those that have money can't get it because it isn't there and those that don't have any money get used to going on one meal a day—that's no joke. And yet, in Pennsylvania and in New York and on Long Island and in New England and down in Jersey, there are thousands of tons of food wasted each year, because a few men elect to pay so little for it that you and I and the other fellow cannot afford to box it up and ship it, and it is not on account of railroad rates, either. I found that railroad rates amount to one two hundred and fortieth of one per cent. of the cost to the consumer. We made up our minds that that then was the proposition, to furnish food for New York markets, as gardeners, small farmers, they are called in Europe. We made up our minds that the small acreage intensively cultivated was the thing for the nearby folks and so we started on that line. It's going to be a little difficult for an American who has been taught that the more acres you have, the better farmer you are, but they can't attend to it; did you ever notice those fellows with big acres have the worst looking farms? They can't take care of it; they can't think about it, even; it's too big. Out West, with the steam plough, where you can see a man thirty miles out and see him turn around at the end of the furrow and get back at night, that's different, it's all wheat, but you cannot do it here.

The market garden is the thing. Harrisburg, Philadelphia, Altoona, Pittsburg—all your big cities are half fed and are getting food from three thousand miles away. Your local market is the thing. If your local market is crowded, ship it, but don't try to dump it all in a car with a scoop shovel; put it in boxes, pack it right, put your label on it and the market garden is the thing. It is difficult for us to get to walking on our toes as the Frenchman does. When he cuts a cabbage, he don't go away and leave that ground till next season, he reaches in his pocket and puts a seed in there, in the place where the cabbage came from; his land is working all the time, four crops a year. About a foot apart is ample room for a man to walk and get his heels down, and the Frenchman who makes a thousand dollars per year, not in off years, but every year, per acre, and won't handle more than three acres, because he can't, is making more money than a great many men in the East, with a hundred and fifty acres that grand-dad left them. Now I am going to give you the history of the world—it won't be as long as that; simply to explain to you why we did the things we did. We all know, by reading, anyhow, that our soil is composed of this, which is rock, ground up, knocked apart by frost, rain and wind.

That's soil—combined with vegetable matter. Let's see how Nature did it. Way up there are some specks called the lighter. That is the lowest form of vegetable life, the lighter. A place to hang on and a little water and it grows, but after a couple of eons—Nature don't care anything about thousands of years—a lot of that stuff fell in that little crack and then it got a little better, a little fern, that began to look like something—goats could eat that, anyhow. Those fell down and settled in here and we got still a better form of vegetable, a big fern. That died down for years and with this old rock chipping away, chipping away, we got the best plant in the world, the tree. Now, we had observed that a great many times and we con-

sequently knew that to grow trees of any kind or grow good things, that you must have two things in the soil, mineral particles, potash, phosphate, as they call it, and the humus, the vegetable matter which nature laid down there in the falling leaf; and our ancestors didn't have to use anything, they had it there, that was Nature's work. So we knew we had no humus; we had the other stuff, and there was a dear old man that looked into this and found we had enough potash to last a hundred thousand years and enough phosphoric acid to last twenty or thirty thousand years, and I didn't expect to live that long, although grand-dad did live to be 98, and so we didn't need to buy any of that.

We remembered that grandfather used to plant a cat under the grape-vine when the cat went to cat heaven and you got mighty good grapes when the cat settled right down to business under that grape-vine, and we knew that that whole bunch of leaves would do the same thing. We couldn't buy leaves and there were not enough cats, so we bought manure, bought ten tons of it, and it cost 95 cents a ton, delivered out on the Island; that's \$9.50; and we found that 400 pounds of wood ashes—we had some of that—or 800 pounds of lime, would sweeten the soil or make it alkaline, as the professor says—they are both the same thing—so we bought some lime and we knew enough not to mix them together, because when you do, it fizzes a while, and they tell us that's the ammonia going off, and we didn't want it to go off, so we didn't mix them before we got them in the soil.

To my mind, the most necessary thing for success, in any walk of life, especially agriculture, is observation, and then the application of what you learn. Well, authority said there was half an inch of soil. That was the bottom of the soil and that was the top. Here's a man 5 feet $3\frac{3}{4}$ inches high when he stands erect to be measured and that's a plain, common everyday shovel. Below that is a very close, fine sand, not sea-water, so we had 3 feet of soil instead of half an inch, to start with, and the bulliest way to find out how much soil you've got is to dig down and see; there's no use sitting in a railroad train and guessing at it. We knew there were many people in the world who thought they were kings because they had 8 inches of soil and here we had 3 feet. We bought that in the city, plenty of it. You can buy it awful cheap. People have to clean the stables out every day and get it out in twenty-four hours and we bought it awful cheap. It was full of paper and wires and all sorts of bric-a-brac. Now we have a light, easy, friable soil. We knew it was dangerous to plough over $2\frac{1}{2}$ inches deep for fear you'd dig up the "pizen" soil; it liked to scared me to death. I dug up 6 or 7 and it raised beautiful crops. Now we get down 10 or 12 inches like that.

On Long Island we are not like they are in New England, where, every time you run a 200-foot furrow, you've got enough stone to make a beautiful stone fence around the house. We simply have a nice, friable, sandy loam, and that means I can take a bunch of that earth any time in the summer and squeeze it together in my hand and it will stay there just like a ball, and that's good soil, but it lacked one thing and that was vegetables. We used other improved tools and they are all American. This little Planet, Jr., is made in Pennsylvania. They tell me there are others just as good. I shipped carloads of those to Mexico and sent shiploads of them to Russia and Japan when I used to be an exporter—you see I'm pretty old—when

there were not any of them used in the United States, and Allen, of Philadelphia, will tell you the same thing, that the rest of the world are using Pennsylvania labor-saving implements for seeding and tilling the soil, when Americans won't touch them with a ten-foot pole—they take a hoe and do this thing (illustrating); I used to do that. I don't do it now. We don't sprinkle seed along with our fingers and get some in at this end and some at the other and a little more in the middle; we used that Planet, Jr., and it's a good one, and helped us handle ten acres of wild land, broken up for the first time, with huckleberry roots, brambles, etc., in it, with three men—none of them knew anything about farming, according to the natives, and the experts, the boss and his wife, knew less. But we learned a heap as we went along; anybody can. There's the three men that we started with and that's what happened the first year.

Now, here's a common, everyday freight car. We used it for a chicken house. We didn't have time to build buildings, so we got some old, common condemned cars and the railroad charged me for them, and we used that; and there's rhubarb that sold for five cents a stalk. Why? Why, because it's worth it, because it's bigger than the other fellow's rhubarb and we got it in ahead of the other fellow. When I was a boy out in Ohio, I used to help put nail kegs and brush around the rhubarb so as to get it in ahead of the other fellow and we got five cents for that rhubarb, and when the neighbors came in with theirs, they got $1\frac{1}{2}$ cents a bunch, so we thought it paid us to do that thing. It looked like blazes, but so did the bank account. We knew a year before we started that everything was done with Pennsylvania millions and we knew all the millions that the Pennsylvania Railroad could borrow in Europe wouldn't grow one cabbage. Money won't grow things; it takes soil and climate and seed. Then we got these off. When we bunched our radishes, we didn't kind o' sneak in one that had a hole in it or was a little bit bum on one side; we put in the best we knew and put a label on them, and we got a better price for our radishes, just the same as Bill Jones does or our friends from other portions of the United States. We didn't say, "Oh, that looks pretty fair to middling, let her go"; no, sir, if it didn't look bully good it didn't go, and it didn't take long to get that reputation and have a man spend 45 cents to 60 cents telephoning out to know whether he could have some more and how much—not send it in—and, "We'll send you some if we have time and don't need it ourselves; how much will you take?" That's the way it should be. They said we couldn't grow a head of lettuce, that there never had been any grown on Long Island and couldn't be grown. I said, "Why?" Well, they didn't know; there was some mysterious reason.

At that time I had two varieties planted and I planted seventeen more and got nineteen heads of lettuce. Here are some of those: they looked like head lettuce to me, as good a head as anyone ever grew anywhere. We found out afterwards that our friend that couldn't grow lettuce was planting lettuce that had come over with the ship that landed at South Hole in 1643. They believed in saving seed, but it was the wrong kind of seed they were saving. You see where we are exploding superstition and theories. Now, we knew about this tomato business; we knew about shipping train loads of tomatoes when the other fellow was shipping three train loads, and we wanted to see if we couldn't ship some earlier. That is nothing

new now, but it was then, so we raised them in these paper pots, which lasted three years. We had discovered that the tomato, when set out, usually took about three weeks to recover, if the roots were broken. We found that when we grew them in a paper pot, that that paper pot slipped off so that not a root was injured and they never wilted, but went on growing. We gained just three weeks with our tomatoes in the open and we planted them in our orchard, so as to get some money out of the orchard before the orchard got to bearing. Even on Long Island an apple tree will seldom bear the first year. Three rows of these tomatoes, a little tree at each end. We planted all the seed we could find, including apricots and nectarines and they all gave us fruit, lots of it.

Then, remembering how the lower end of New York looked in the tomato season—you can hardly drive through it, you can't walk in the streets where the commission men, as they used to call themselves, are—I don't know whether they call themselves that now—because of the tomato juice. In the tomato season, they have a cheerful habit of sending tomatoes to New York in a bushel crate; the result is that when that crate gets into New York, about two-thirds of the tomatoes have been turned into tomato catsup, and then the gentleman that ships them gets sometimes, not always, but occasionally, 8 cents a bushel and the crate costs 12, so that the more he ships the more he can lose. It's wonderful, but that is a fact, and we decided to beat that if we could. We packed six of those boxes with tomatoes and every tomato was good, and we didn't put any bum ones at the bottom, either. Then we sent some crates boxed that way to a commission man, and he said—I went in afterwards, I didn't wait for anyone to write me a letter about that,—I followed those tomatoes and the commission man said: "Look here, Fullerton, I guess you don't know much about market gardening." "No," I said, "I don't know much about it; what's the matter?" He said, "Do you think you can break into the customs of New York City?" I said, "Yes." He said, "You can't." I said, "I can break into anything that is wrong, and if there's any fool method of packing tomatoes, it's the way New York insists on having them packed, and me for the wild break. How did you get along with those?" He said, "You can't sell tomatoes that way; you've got to sell them in bushel crates. We can't do anything with them." I said, "all right, I'm not a salesman, but I'm going to sell those tomatoes before noon." He said, "You can't do it." I said, "I will." He said, "Come around and let me show you," and I went around and he showed me. We waded through tomato catsup and he showed me how the right way was and then we went back and I said, "Where are those tomatoes of mine? Let me look at them. I'm going up town to sell them." And he said, "Bill, where are those tomatoes?" "Why," he said, "we sold them."

Now, that was awful, wasn't it? While he was away, proving conclusively to me that you couldn't sell them, some underpaid individual that wasn't much good anyhow, had to sell them because the man insisted on buying them, and we had busted the customs of New York. I walked on with him so he could have the argument out and when we came into the office, I said, "Say, neighbor, just as a matter of curiosity, what did you get for them?" "It's the funniest thing you ever saw," he said. There wasn't quite half a bushel—in those crates, there were six alleged four-quart boxes, but neither Michigan quarts

or Ohio quarts or farmers' quarts or skimp quarts or skin quarts, but there were no quarts, so we had six alleged four-quart boxes, and that's less than half a bushel. "You got \$1.50 for them." I said, "It's awful, Maggie, ain't it?" I said, "That beats 8 cents a bushel; I'm going to ship them this way all the time." He said, "You will never sell any more in the world." When I got home, I got two telegrams and four telephones, wanting to know if I could ship two more crates to one man and sixteen to another and I don't know how many to another. My partner there is helping with them; you'll see her right through these slides. And so we busted into New York. Cabbage, we raised that the first year by planting the right kind of seed. It was all head, came on early. We had fearful competition, but what with Jersey Wakefield—that's a real wheelbarrow, man's size wheelbarrow, and a real girl, and better than that, she's a Long Island girl; we grow them fine over there.

There's another fool thing. New York is importing immense quantities of green stuff for its foreign element that loves salad. In this country, most all of us think salad means lettuce, but over there they have all sorts of green stuff they eat, and among others is endives. That is, they bring it from Europe, they import it, bring it over in the cold storage of the steamers in great quantities. It is just as easily grown as lettuce and a little bit easier. You can grow it in the hot season. It is a big money maker and that's the way it grew. We planted European seed and that's the way it grew. In New York there are folks who have been to France, who buy a funny thing that's called the Jobel artichoke. It is a big thistle and comes from Belgium and very seldom gets here in good shape. Men that are used to eating them and think they like them, take hold of these stems. They are picked before they bloom, in the bud; they pull these off and dip them in French sauce and strip them through their teeth, and sometimes you get a little string off of it, half an inch long and it tastes exactly like the French sauce tastes, but they are worth 75 cents a piece and bloom the second year and are pretty near as easy to grow as a Scotch thistle. They are hardy and have corking big blooms, and our fool bumble bees think they are just the same as our own thistle. Bumble bees and I don't know any better. They looked to me like a thistle, big head, that's all.

Then, although fond of onions, especially when served with beefsteak, fried, we never cared for the onion that is raised in this country, that red Weathersfield; it is too swift for us. I understand it is easily raised; I guess so. I guess it would fight pretty nearly anything and lick it. We knew there was a market for so-called Bermuda onions and we were inclined to raise the biggest we could get, and we got some giant Gibraltar seed, among others, and this was it. Those onions on that ground, with nothing on it at all except a little made-up humus, gave us onions weighing seldom less than three pounds and many of them over three pounds a piece and that onion was just as sweet as an apple. Oh, it had the onion flavor, all right, but it had no bite to it, and it was certainly good to eat, raw or fried or boiled. And as they thought they were Bermuda onions, why we got real good prices. Prof. Watts paid 5 cents a pound for them—I didn't get that much, but I got \$3.50 when the other fellow was getting 45 cents for his onions, and it takes just as much labor exactly and just as long a time to raise that measly old red, easily

kept, easily grown Weathersfield, as it does to raise those glorious things that you can get any price you want for them.

Potatoes; most people over there plant potatoes late, it's easier, you don't have so much trouble with cut worms, you don't have to get out in the cold so much to plough; you can plough after the weather gets warm. It's pleasant sitting out in May cutting potatoes, working around the field. We wanted to try earlier; we tried them. When we sent them into New York, we got \$3.50 a bushel for them. It is true, we only got 285 bushels to the acre, and our Long Island friends, some of them, got that year 320 to 350 bushels, but they got 65 cents to 85 cents a bushel and we got \$3.50 a bushel for ours. We are still growing early potatoes; there's plenty of room for them. Now those are sold in New York as Bermuda potatoes and that was the only competition we had, and ours came in as early as theirs and were better to eat.

Then we tried some more things. Over in Japan, they have what they call the Sakar Regima radish; it's a corker. We will probably call it Old Sacks here pretty soon. It's a good deal of a vegetable. We found the record in Japan was 30 pounds. The first year ours weighed 18; the third year, 42. Not all of them, but the big fellows. They keep all winter; they are a late radish. They are good to eat raw. They are just as good as a French breakfast, sweet; the meat looks very much like apples. These great leaves make two more vegetables; this part may be eaten like lettuce and that part makes good greens; it is fine cooked like asparagus. They are very easily handled and we understood why the Japanese love them. They have really four vegetables in one; they eat them raw, they cook them like turnips and they eat the leaves both cooked and raw. Sometimes the leaves measure four feet. That's a husky Long Islander, too. We found that everybody liked the radishes, it didn't seem to make any difference whether they were blondes or brunettes, they all liked them. We tried some of these. We heard you can only grow those in the South. We tried them and found that we grew them just as long and just as sweet as the South did, exactly, if we planted the same kind of seed they did. That was all; the only difference was planting the right kind of seed. We found Albert Randy, for instance, fine. Later, we found Tom Watson the best thing on earth; there's no better watermelon today than Tom Watson; it's a good shipper, good to eat, red and always sweet. Tomorrow there may be something better. They grow like that with us, too. I didn't pick them up and put them in a bunch; I just happened to see them and took a picture. That looks easy, but you got to fight to get cantaloupe the same as you do to get potatoes or any other good thing.

We've got to scrape from now on. Europe has been doing it for a good many years, China for 4,000 years and portions of Europe for 1000 years, so the fight has just commenced with us. We have got to scrape from now on for everything we get; and you've got to spray. I suppose you all know what to use. The best thing we found is Pyrox, and, as one of my neighbors said today—I'm not getting a cent for saying so, either—I don't get anything for telling you about these things and I pay full market prices, too, but of all the things we's tried, that is the one best. There's the varieties of melon; here's Colorado and here's Montreal. There's a melon that last year sold at wholesale for \$36 a dozen in New York, \$3 a piece. It's worth it,

why not? It isn't very good to eat, some sweet, not much, but there's a slice that the Willie boy can offer his friend or companion in the restaurant and paralyze him with and it only costs Willie \$1.50 and Pa's got money to burn, so that the farmer—but he's a Canadian—raises these things and they are just as easily raised as the little fellow, exactly. Why don't you get in on that? There never was enough to supply the market and the lowest I have ever seen was \$36 a dozen, wholesale; Montreal melon, fair to middling cantaloupe, that's all—it's only big.

Now those are not all, but a good many of the things we got ready to send to the fair; dollar an acre land, \$9.50 for the fertilizer. We don't call it that, we call it humus. Humus is so much easier than saying anything that is vegetable or animal that will rot or is rotten, so much easier and pleasanter, so we adopt that. Probably we don't pronounce it right. Those are a great many of the things we raised on this dollar land right close to New York City, and I've got friends who are fighting with a rifle to get enough water out of an irrigation ditch to water their land; if they don't get enough water there's nothing to eat. I've got other friends down in Florida, some of whom have located their land too deep; others can find their land in the dry season; others have got good land and are making money, but there's a heap going down there on what some men did eleven years ago with one lettruce patch—he had the only lettuce in the world that winter, he had a cinch; so will I after they are both dead. After we had raised all that stuff, this is the thing we went up against, this is the real thing; you get it, don't you? Here is the producer; he's got the stuff and he wants the money. Look at that. Here is the city man; he's got the money and he wants the stuff. Now why don't they get together? I don't know; it isn't ignorance.

Will any man stand there and let me call him an ignoramus, unless he's a Quaker and don't believe in fighting? I know places where, if I started to say that, there would be the worst mix-up you ever saw and I'd be sent to the bottom. I don't know why they don't get together, that's only one fellow and the guns are not loaded. No no; don't say the commission man up there does it. Food speculator, that's right; there ain't any such things as commission men. There may be one or two, but I don't know where they are. You may have them over here; we haven't any that I can discover. Now there's the trouble and you've got to solve your problem; in fact, both of you must solve your problem. Let's see how they are getting at it. Your food speculator has a national organization that's a corker. If there is an organization, a combination comes up on any food product, bang! goes a wad of money into that community to jack up the prices, to break the combine of the producers. That happens so many times that there's no use of mentioning names. If you want them I can give them to you.

When producers attempt to combine, there goes a wad of money from all over the United States and it is concentrated at that one point. Their is an army well organized under good officers. They know their business; they have their spies and scouts and flying artillery and cavalry and infantry and have got the whole bunch, rapid fire guns and all, and they know what happens before the boys ever get officers elected, before they get down to business, and before they adopt a constitution, the big association is coming in to swoop them.

You must meet them on the same ground. Get some airships, they haven't any yet. Lick them out. You've got lots of men here that can do it. Now and then there must be another fellow; get together; that's the man over there, the consumer. He got together in great shape; I think there are fifty-seven consecutive societies in New York City banded together fighting this speculation, high cost of living, hardly making both ends meet. But they form too many societies. I don't know whether it's because everybody wants to be president or whether they don't know that united we stand, divided we fall, as we see even on the pennies. It's a good motto for both hands. Those people in New York—I don't care anything about it here, but in New York and other places the people must get together and demand a public market. Oh, it works out all right if it is a public market and no one is permitted in it except the producer or his representative, no speculator, no huckster, no auctioneer, no second or middle man of any description; no one but the man that raises the stuff or his own folks; then that man can go or send his hired man or hired girl or push the button for a messenger, if he wants to; then you can dicker just the same as you used to, and you will get more and he will get more for less money. But you have got to get together and maybe you will have to starve as the apple growers of the Northwest did before they got together. Maybe you will; I hope not, but apparently you have got to starve the producer plumb to death before he will get together and get that business partner we've got to have, because every good, successful farmer is a nature lover, and a nature lover is a sentimentalist and an idealist, and he loves his plants and raises them, and after he has got them raised and got the finest lot of peaches on earth, what more would you? But he don't know how to sell them for shucks, because he hasn't got that end developed. Now he has got to get into partners with somebody. If there isn't any good business man in that community that can handle those goods, then let him hire, not some nice, cheap man that failed to cut off a yard of dry goods 36 inches long, for life, but has never been able to hit it right, but the best man he can find, if it costs \$10,000 a year. Do you suppose Morgan made his money by hunting around for cheap men for his lieutenants? Do you suppose that the Pennsylvania Railroad has made such wonderful record in carrying its millions of people, by hiring a lot of men that will work real cheap for them? No, sir, they got the best they could get and the best come high, but they always pay, and the big man long ago recognized that and we ought to start in with that line. You can't hire a ripping good man for a small salary. That's the way we solved the problem. I don't say it's the best solution on earth, but I haven't seen any that I like better yet. That's a home hamper. The six 4 quart baskets again and there happened to be one pack of one hamper that was shipped. We ship anything there is in season from the market garden and nobody tells us what to ship. We sell it for \$1.50 delivered anywhere in New York or Brooklyn. We pay the railroad 25 cents for carrying it and deliver it by express; 25 cents, yes, that means \$1.25 to us yet. don't it? No, because the basket costs something. These costs something and now we use a little green paper in there and that costs something. The label costs something; the labor of packing costs something. We make 98 cents clear on what is in that basket, not on that particular one, but all through the season. Now, we tried to see

what we'd make the other way, so we shipped these in bulk, crated baskets, barrels. The contents of that hamper, the most it ever brought us shipped in that way, was 8 cents; the least, 4 cents; the average, it's a quick thing, you know, is 6 cents. We are making 92 cents more by shipping that way. Oh, yes, it's a little more trouble, certainly; you've got to think and you want to know whether to put the cabbage at this end and the cauliflower down there. Of course, all these things take more time than the scoop-shovel idea into a freight car, and more thought. You can hire awful cheap men with the scoop-shovel, but you can't get 98 cents. On the other hand, we found the consumer got for \$1.50 what he'd have to pay from \$2.20 to \$4.50 for. Those are the figures given us by many folks. We've watched them, so we were saving them from 70 cents to \$3 on every hamper. This year our orders were so many that we sent back just three times as much money as we could cover by hampers and we keep no books, and sometimes we get a check for \$65, saying, "When this is exhausted, advise me and I will send you another check." Sometimes we get a check for \$1.50, sometimes for \$6.

We find that the average family—and by the average family I mean really an average family, a man and his wife and a couple of children—will use two hampers a week. The New York family, which consists of a kitchenette and a man and wife, nothing else—did you ever see a kitchenette? You have to be thin and walk sideways. All the furniture has to fold up when you move around. After you sit down, you fold the dining room table down, reach for things out in the kitchen and put them on it. Great! The bed folds against the wall. I don't know how they get in it, I suppose they jump up in the air and when the bed falls down they jump on it, but a kitchenette, you can't exaggerate it, it's so funny, it's perfectly ridiculous. Those people use one hamper. Some orders will call for two Tuesday, two Thursday and four Saturday. We have never advertised. We started this by shipping seven hampers to people that we knew in New York, not relatives, and we wrote them a note, saying, "We are going to try this out; if you like it, send us \$1.50; if you don't like it, accept it with our compliments." Every hamper was paid for and we got three and a third customers for every hamper we sent, and at present the Long Island Home Hamper is used all over the United States and has been for five years, except on Long Island. They were not going to follow any fool notions of that railroad book farmer—that was my regular pet name for years, but they are doing it this year; four of them went into it. Here is another hamper shipped in November. Oh, it's easy enough to keep tomatoes by pulling them before the frost gets them and putting them under the shed or putting them in an attic, and when you want them to ripen, bringing them down and putting them on the kitchen shelf. Of course, it costs money, but look what you get for them and our tomatoes don't lay on the ground and rot, here's another illustration of the public market as a solution of the high cost of living—that's the suggestion of Ralph Peters at Long Island City.

I think I know what you are thinking and what I've seen people think in other places. Those are roads running in there and any man that has got a team can get to that market, he don't have to ship over the Long Island Railroad, and the market is put where steamers of the deepest draught from coasters up can come right up and un-

load right there the same as the railroad can here and the same as the teams can there, so it's wide open, but no will ever go into market except a producer. That is one of the solutions of the New York situation. It would take a good many markets to supply that great city. Well, these are what some fellows call creations, but they are nothing, they are just selected from this. This is nature's way; she has to fight for it and does all sorts of stunts. These are selected. Now, that isn't a very good berry to eat, the Heritage, look at it. It brought 75 cents a quart because it's big. That's a corker, a good one. That's the Chesapeake; that's all strawberry, running close to the same type, very close, always uniform and always delicious. The best strawberry we have found, we have tried many, that's the Chesapeake. Here's a thing that is almost unknown in New York; you can't buy them. I loved that in the west, the middle fellows, and I never was able to get one until I raised it. Yet there's a demand for that; the Culprit, the Cumberland and the Golden Tree. The Cumberland is by long odds the best raspberry that we have been able to find in the diggings. There's the dewberry. Now those people are fighting dewberries; that's a mistake. Over here is the Lucretia. Now, those are sold as blackberries and they are blackberries of the vine kind. they are the best of the blackberry family. Here is a better one; that's the Lucretia; this is a selection from it, the Austin. If that is taken care of and petted on the back, the same as you pet other crops, you've got there a berry that comes in directly after the raspberry and before the other fellow gets his blackberries. You've got a sweeter, finer berry, without a core. What is the use of raising those bushes that by and by will take your farm, when you can have the dewberry? I don't see it. They are better than any blackberry I ever tasted when I was a small boy out West. They've got the blackberry skinned a mile for sweetness. You can't raise that sort of stuff on sand or soil that's no good and neither can you raise it unless you fight for it. You can't have that and San Jose scale both; you can have one or the other. My trees have been pronounced time and time again the ideal trees—apple, peach, pear, plum, apricot, nectarine, Japanese plum and cherry, and for twelve years I have used Miscille Oil for spraying. I prefer it and bought it steadily for eight years and I have never injured them. They are wonderfully healthy specimens. Lime and sulphur will kill San Jose scale, but I never use it for two reasons. I have used it, but I don't use it regularly for two reasons. One is that it is hard on the eyes; another is that it is hard on the clothes, hard on the horses, hard on the harness and hard on the machinery. Still another reason is that when you hit a tree with lime and sulphur, you hit it all right, but it stays, it don't spread; when you hit it with oil, it spreads. I don't get anything for recommending that, either; I am simply telling you what I use and why I use it.

There's a little story I love very much. This is my little girl, eighteen months old, and this is her plum tree. Let's watch it and see if you have to wait a lifetime to get fruit trees, as I have often had people tell me. This is the same little girl and the same little tree, two years later; plums on it; that's a Jap. This is the same little girl, you recognize her; you know I am not faking the girl or running in anybody on you. This is the same little girl and the same little tree, solid, full of blooms, in full bearing, four years after you saw the little

seed drop in the dirt. What's the matter with those? They are funny Satsuma, full of a very funny, fuzzy coat. Let's see inside and we will find the Japanese spent 2200 years developing these. However, we do funny things. This is what the Japanese worked for for 2200 years, for small pits, lots of flesh, very firm, so it could stand up, and the right amount of acid to make it the best preserves on earth. That's the Satsuma Plum of Japan, and the Somusu, which it took 3,500 years to develop is called the Burbank, one of these California creations. The Ecra, with a record of over 2,800 years in Japan, a written record, not guess record, is called the Wickson. I don't like to see that. I think those old fellows that did it had a right to name those plums and they should keep their own name. If you can't pronounce that, do the best you can, but Ecra is pretty near as easy as Wickson, and I like Somusu as well as Burbank. I don't think anybody created anything since the world began.

Here is a little corn we raised on some of that land without any manure or any lime. She went 16 ft. high. When I came East, I wondered why you fellows all raised popcorn. I had been used to 22 foot corn and I saw this little funny stuff in the East and thought it was popcorn. I went to the Institute of Technology, that great scientific school in Boston, because father thought no one could be educated unless he was educated in Boston, and one day the professor got up and said, "Field corn sometimes grows to from six to eight feet high," and I was a westerner and butted in and says, "Excuse me, professor, you mean eighteen feet high." He says "Sit down, Fullerton, you westerners are so given to enthusiastic hyperbole." He meant the same as lying, exaggeration. I wrote home, "Dear Father; your eldest son is now a liar in the eyes of 110 of the noblest students the Institute has ever known. Please send me some corn at least 18 feet high." My beloved father sent it to me and it was 22 feet high, and I told the old professor that if he'd excuse me, that corn I spoke about is here. He said, "Bring it up." I said, "Look out the window, Professor; I guess you've got another guess coming." He looked out the window and says, "Bring it up and pile it just in front of the entrance, hang a tag on it and I will explain to the boys that, although I had the best sources of information, they were in error." I said, "Thank you, Professor."

Now, I wanted to see that dear, old, sure-enough field corn, so I got some from Virginia, and there it is, 16 feet high. This is what we bank on now, crimson clover, and we don't cut it once in a while, we let it go to flower, but it all goes under, every bit of it, and that stuff lives with us wonderfully, makes a beautiful cover crop, furnishes a hundred dollars' worth or a hundred and forty dollars' worth of nitrogen a year and works overtime for us all the time. We like it.

This shows where we get our nitrogen from. We don't care if South America goes out of business tomorrow, just as long as the Creator of this globe fills the air with nitrogen that we can get so easily. We know that cow peas and soil peas and crimson clover will put that stuff into the ground every time we plant the seed, and we know that, with a hundred thousand years' supply of potash in the ground, whether Dutch Willie's alkali mines go to pot tomorrow, makes no difference to us. All we have to do is to turn under something that will rot, and start fermentation, and potash

is made available to us all the time. There's a little alfalfa there. We found that we got three cuttings a year, of alfalfa, the best food ever made for animal life, chickens, hogs, cows and horses. Will it kill horses? Oh no, no. I had a cow pony out West that traveled seventy miles a day for seventy days, slept with me on the prairie at night—yes, for seventy days and back, he could travel just as long as I could, I've done it between sunup and sundown many and many a time on alfalfa. One time I wanted to be kind to her and gave her oats, bought them and built her a nice little bin and put her in the stable, but that blessed mare stood there and spent all her time blowing oats out that bin; didn't want any shoepegs in hers. I wonder how long it will take to teach horses to eat oats? They never had any until we taught them to eat them. We feed our horses alfalfa; we feed our hogs alfalfa and they bring two cents a pound more than any others in that county—from alfalfa. Don't buy your seed for alfalfa this side of the Alleghenies, unless Holmes has got some. I don't know any other place. Go out West where it's grown, in Montana and Dakota and Idaho. Don't buy it from a Turk that some other Turk from the United State is trying to—well, it's a kind of a standoff game as to who will get the best of the other, and I know who gets the worst, the fellow that buys the seed, that comes from Turkestan, and it's of no value here at all.

You want to know what we pay for it in New York when we don't raise it? Thirty dollars a ton and you can sell every ton you put there in freight cars as fast as you can put it there. The boys in Kansas do it; they know the game. Why, they haven't anything on you in soil, they haven't anything on you in climate—alfalfa don't care anything about climate. You can't hurt it by winter or lack of winter. This is two lengths of it, the first cutting. The most we ever had is 42 inches. It runs from 33 to 42; usually about 37 to 39, first cutting. You know the dear, old-fashioned cow barn that furnished milk for the village and the town. There are several of them left. Well, we started that way. We kept the dear old cows dying by putting a few bags on the place when we ran out of boards and the cows gave milk. They got pretty dirty, but in the spring they got cleaned off. They won't let you ship that kind of milk to the city any more and it's a good thing.

Well, we moved. Our idea, you see, is to show people what you can do and you can do it, how cheap you can do it, how good you can do it and why. And there's only one way to do it and that is to show them. It's like teaching a boy farming, you've got to show him. I don't mean that he has to learn to drive the horses or run the plough, though he ought to do it. I don't mean that the girl has to learn to do it, but she ought to know how, so as to tell that other fellow and check him up when he is doing it wrong and not have to take any back talk, but can say, "Do it that way, the way I want it." "This is the modern, concrete barn as near as we could get it with the silo. And there again we did a wrong thing. We didn't have any nice little 12 or 15 horse power gas engine, so we took the old motor wagon, backed her up, put a belt on the inside right over the big casting, over the drive chain, and hitched it up to the fodder cutter and filled the silo with it. The automobile man said that we ought not to do that, that it ruined the automobile. I said, "Why?" "I don't know." I couldn't argue with the man.

I said, "Why do you think it is harder to turn that little thing and grind that corn than it is bucking sand up to the hub or climbing over stumps in our field? Do you think it's as hard as hauling a ton of alfalfa seed to ship to somebody to start an alfalfa field?" "Oh, yes, it will ruin the whole machine." Well, she's running yet and has been running three years winter and summer and we are still filling the silo with it. I think it paid well many, many times over. It's no joy wagon; it will only go about fifteen miles an hour, and that was a modern dairy house, equipped with every improvement. That's where you have to get your certified milk, your pure milk; that's where you can make butter; and here is the little Quakeress, that, two years after she made her first butter, took both gold medals at the New York State Fair, with the highest average ever given to human being anywhere, 99½ per cent. That is woman's work.

Now, let's see about that. They questioned it. Who? Oh, the commercial men; they said the score was too high. The judges came to me, or the superintendent, and said, "Mr. Fullerton, would your wife stand for rejudging?" I said, "What's the matter?" "Well, they questioned the award." I said, "Sure thing, she don't want anything she didn't win. If the butter didn't get the gold medals, we wouldn't lug them home, not even with tongs. Come then, let's open it up;" and they did, with two new sets of judges. When they came out, one man said, "I don't see why they didn't give her 100 per cent.; it's the finest butter that ever came into this place. What starter do you use?" I said, "Nature started it and alfalfa." We can throw butter from white into yellow with alfalfa in three days and I have done it in 36 hours.

We have miles and miles of these flowers. Go to waste? Violets. Price violets down here tomorrow. Price them next summer. See what they are worth. There's your chance for children and women. Nature does that. There's big money in flowers, wild ones and tame ones. On land worth from three to five thousand dollars an acre, within three, four or five miles of the middle of New York City, are great numbers of foreigners, not Americans.—Germans, French, Italians, Swedes, growing these, and in the spring it's a wonderful sight: Miles and miles of wagons of all descriptions coming over there to get these plants, in pots, of course, to sell to the people in New York City, and those people make their entire living raising pansy plants, but they are all foreigners, and Americans say, "There ain't no chance for a young man now." The chances are better, bigger, more of them today than there ever were in this country. I had better chances than my father; my father had better chances than my grandfather, and my boy will have better chances than I, and so it will go, but they can't sit still and have somebody hand it to them.

Sweet peas; one of the most saleable things there is in New York City and a great deal of revenue in it. That little girl on that patch picks sometimes 5500 in one day. Now we didn't let the other fellow have it all. The Fourth of July we made boquets, she did, red, white and blue. Sweet peas were selling at 15 cents a bunch. She sold hers at 50 cents a bunch. See? Fourth of July, red, white and blue. The other fellow simply had sweet peas. They didn't think just a few moments and keep the varieties separate and put them

together and put a string around—they had to put the string around, anyway. Nursery stock; money in that. The work is a little harder than you do raising corn, of course, but you get a good deal more on a quarter of an acre than you would on fifty acres of corn.

Did you ever buy a lilac? This is a good variety, 10 or 12 inches high, 75 cents or \$1.35. We are setting some out now. We won't sell them, but just wanted to see what there was in it for the young man or young woman that would take up that line. Out at the east end of Long Island is a man with $4\frac{1}{2}$ acres, an Armenian; he has a wife and three children; they travel 44 miles to church each Sunday; he always dresses better than I am dressed; perhaps he cares more about dress. His wife's clothes cost more than my wife's. His house is good, with every modern improvement in it, bath tub, etc. Part of that $4\frac{1}{2}$ acres is occupied by house and barn. His entire income is derived from the purple aster; that's all he raises. Do you think there's any chance yet? I don't know anyone that's raising fuchsias, for instance. There are plenty of chances if you will only make them. There's a good flower; it's way ahead of some of the unsightly things we have around our greenhouses and we plant those around the chickenyard, and it shields the chicken yard from miscellaneous observation, and in the fall you've got something to mix with your feed that helps get eggs, so it's a commercial proposition at the same time. There's lots of money in this, lots of it. I have a friend who is a clerk on a small salary, who has a little daughter that can only eat perfectly fresh eggs three times a day. He paid \$1.00 a dozen for perfectly fresh eggs. I have another friend who pays 70 cents a dozen the year round for *fresh* eggs: fresh, not nearly fresh, not almost fresh, not only in cold storage seven years or five wears or three years, but really fresh eggs; not eggs that the farmer has found under the barn in the fall, but fresh eggs, that is, eggs to be eaten Thursday that were laid Wednesday. There's your market; it's open to you. Any man, woman or child here can get it; it's there, and you can ship them by Parcels Post for 11 cents a dozen. I know, because they have been shipping them to me to try it out.

What is this? A fool stunt? No, it's what we call a bird basket; just a little old stump. We threw out a little $\frac{1}{8}$ inch pipe with a little gas jet on it. When we went there, there were no birds except the whip-poor-will. Birds won't build nests unless there's running water; they can't. They can't take care of their young without water; so we thought we'd furnish running water and we did it that way. That fall our bird experts counted 86 varieties of birds that had built their nests in our trees.

What did we want the birds for? For several reasons. We loved to hear them sing, we loved to see them and they are the cheapest insecticide you ever saw. They have helped us more than all our own work. Without the birds we'd be out of business. Somebody questions that. Let me see. There was a State out West that put a bounty on hawks a few years ago and paid every fellow that brought in a hawk \$1.00, and by and by they called for the United States Government to come and see if they couldn't do anything with the mice that first destroyed their crops and then their corn. By and by they couldn't even grow wheat, not a bit, the mice cleaned all the wheat out. The Government sent out and they fought and they

used science, they used everything they could think of, talked about electricity and finally gave it up, and then what did they do? They went back to nature's way. What was that? Somebody suddenly waked up to the cheerful fact that hawks used to eat mice. Some of the nature cranks, you know, observed that, so they said they'd pay two dollars a piece for every baby hawk that could be raised, and they have given up chickens and gone to raising hawks, and when they get enough of them, nature will go back to her old adjustment and they will have their wheat and other crops. We have got to be mighty careful how we upset nature's way. Why did they offer a bounty on hawks? Because once in a while a hawk got a chicken and the fellow that owned the chicken got made and wrote to his assemblyman or senator about the frightful destruction of chickens by hawks and the senator or assemblyman passed this bill to insure his re-election and raised Cain with the State, all because Bill Smith lost one old hen—that had stopped laying, at that. The only place for these is out in the country—the only place for children. Oh, there are some of them that do live, in spite of you, in the city, but the country is the place for children. I love it for another reason, that's because your partner and the children can be with you, work with you; you know them. Why I know my three blessed children better now, with the boy only four and a half years old, than the average father for three generations knows his children, because they are with me and I am with them every day. If I was in the city or if I was a suburbanite, I would be beating it before the kiddies were up and get home after they had gone to bed and I would only see them on Sundays, and they would probably wreck me then, because I wasn't used to them, because children can tire you fearfully, but you dassn't let them know it. I've got a good friend right in this audience that will back me, I bet you, in all I say about children, and he ought to know, because he's got eight of them. I only have three. Eight is eight times as good as one and if they were mine they'd be a good deal better than three; I don't know about his. He's a live wire and I bet you that the United States will be glad and so will be Pennsylvania if there are eight children in that family, and, for gracious' sake, don't let New York get him. You let them scoop up a right smart bunch of your good fellows at State College. You've got a few left and you want to arrange to keep them there and want to keep Neighbor Tyson, also.

You've got another man here that has done a whole lot to help you. He's a live wire and you want to keep him here, too—I don't know your Treasurer, but I love the name of the place he lives in. King-of-Prussia has got some of our Long Island towns skinned a mile. I go out and read the name of that place he lives in when I'm tired and I think of Yakiham, Yaphank and Maptunk and a few names we have down there.

Some people say, "Everybody works but father," but that's a mistake; that picture proves that father's on the job, just the same. I don't shunt it all on the wife and say they are her children, go on and bring them up. I never have done that, it never struck me as a square deal. Oh, let us be thankful and when we are thankful, let's have a real pie. Now, I've been eating New York City pumpkin pie. They take some bum crust that's like cracker crumbs and

smear something yellow, perhaps paint, on the bottom, and call it pumpkin pie, and I have seen people absolutely work for hours trying to get six pieces out of one pie. In the first place, it requires geometry to do it; in the second place, it is not a square deal; you can only get a man's size piece of pie by cutting the pie twice, bang! bang! and you want to put some pumpkin in the pie like that.

I have been thankful—for 56 solid years I have had all sorts of things happen to me; I have starved to death; I have been nearly everything that any pioneer has been. I have been broke once or twice, but I never get sick. I occasionally get hurt, but I get right over that; I don't get something the matter with me inside that I can't find out and have to dope myself, and I have been thankful for that every year just the same. I've gone without water and without food and I've gone pretty near the limit a good many times. I've got mixed up with Americans, Mexicans and miscellaneous folks, to my detriment a good many times. I'm a pretty small man to get mixed up in a fight and I never quit until the other fellow convinces me that I've got hurt right smart, but I love Nature and there's always something beautiful in Nature, even if the gale is 80 miles an hour and blowing the roof off, it's wonderful to see how high it will sail. There's never a minute outdoors that isn't beautiful, and on the other hand, if you live in the city when the gale is blowing 80 miles an hour, just think of a 37-story building falling on you! That's different. I don't care for the city, not that I'm afraid of the buildings, but there's nothing there that Nature made; it's all man-made and he does make awful botches of it sometimes, especially when he improves like this, (referring to the slide). Well, I don't know any better and I believe you'll all agree with me. It's what I've used a great deal, (referring to the slide reading as follows):

“Now I get me up to work,
I pray the Lord I may not shirk;
If I should die before the night,
I pray the Lord my work's all right.”

Any man and woman that lives up to that will never accuse the world of mistreating him or her. They will never find that they are losing their job. It's the fellow watching the clock, carefully figuring how little work he can do to pay the man for the money he gives him, that is going to be dropped out when there comes a cirflumux in the market or J. P. decides to lock all the money up in his own particular cellar or some little upset happens like that; but the man that will live on that or the Golden Rule will get all right. I don't know, how long I've run; I'm a long distance talker and I never get tired of this subject and I could start over again and not repeat anything I've said; so many stories do each one of these pictures mean to me. My only regret is that I haven't that blessed parner to take off a little of the harshness of my voice and a little of the jump, perhaps, and a little of the fight that my Dago ancestors gave me. You know, we are in the habit of calling people Dagoes now that we used to look on with great respect and call Italians. I was figuring it up and I found that my grandfather was born in Paris and my grandmother in Madrid, Spain, and they came over here early, went out West, built the first log house out there—city folks, had to cut their own road all the way from West Vir-

ginia, with sixteen children. Grandmother killed seven Indians while holding her oldest, her first-born son, on her arm. That was the only thing she could remember that was hard. City folks these were, from Europe. Then I looked up the other side and found that my grandmother on my father's side was Irish. I'm three-quarters Dago and I'm glad of it. That's the reason I enjoy life; that's the fighting blood, the Latin blood, but I married the other side, the German, that's the reason, you see, I'm really well balanced, when Mrs. Fullerton comes with me: a Quakeress of German descent and a cowboy with Latin blood, and so life is one glad, sweet song; there's always something to please us both.

After further music, the Joint Meeting adjourned.

N. B. CRITCHFIELD,
Secretary.

